Concept 1-1
Adaptation and Survival

Remember that:

Penguins' feet end with webbed toes with strong claws. They keep their feet from freezing as follows:

* The penguin's heating system is very powerful due to its body covered in warm, waterproof feathers, and under its skin is insulating fat.
* So its body is always very warm, it gets rid of this heat through its feet and beak.
* When the sun is shining in the daytime, penguins tend to move closer to the sun to warm their bodies (Behavioral Adaptation).

A lizard can maintain its internal body temperature as follows:

* When the temperature falls down, the color of the lizard's skin becomes darker and it is able to absorb heat (Structural Adaptation).
* When the temperature rises, the lizard's skin becomes lighter in color; it resorts to its shady and damp burrows during the day to avoid the heat of the sun (Behavioral Adaptation).

Ways of adaptation of some animals in order to survive:

* Thick fur (a structural adaptation) that covers the body to feel warm, like an arctic fox.
* Long ears (a structural adaptation) of the fennec fox, which works to maintain its body temperature.
* Hiding in caves under the snow (a behavioral adaptation) to keep the body warm in the cold polar regions, such as: polar bears, grizzly bears, and Alaskan brown bears.
* Hiding in burrows and among rocks and sand in the desert (a behavioral adaptation) to keep the body cool, such as: jerboa and some types of insects.

1 Choose the correct answer from the given answers:

1. Among the problems that affect the survival of living organisms is the ....
   a. temperature change
   b. scarcity of water
   c. availability of shelter and food or lack of them
   d. all of the above
2. A .... belongs to desert animals.
   a. fennec fox
   b. camel
   c. lion
   d. a and b together
3. The bat sleeps in the .... position.
   a. upright
   b. upside-down
   c. inclined
   d. flying
4. The bat depends on .... in hunting its prey.
   a. echo
   b. refraction
   c. diffraction
   d. interference
5. The desert lizard protects its body from heat and drought by ....
   a. hiding in burrows
   b. being active during the daytime
   c. panting
   d. running
6. One of the characteristics that enables an organism to survive and reproduce is ....
   a. balancing
   b. adaptation
   c. extinction
   d. hiding
7. Fennec foxes resort to panting ....
   a. to increase their sense of hearing
   b. to maintain their body temperature
   c. for reproduction
   d. for fast running

Answers 1:

1. d	2. d	3. b	4. a
5. a	6. b	7. b	

8. The fennec fox has large ears that work on ....
   a. cooling its body
   b. increasing the sense of hearing
   c. protecting it from the sun
   d. a and b together
9. The bull shark resorts to a strategy of camouflage called ....
   a. Graph
   b. Color variation
   c. Feeding elasticity
   d. Countershading
10. Agama lizard and panther chameleon belong to .... reptiles.
   a. cold-blooded
   b. warm-blooded
   c. solid-blooded
   d.boiled-blooded
11. Types of adaptation include .... adaptation(s).
   a. structural
   b. functional
   c. behavioral
   d. a and c together
12. There is a layer of .... underneath the polar bear's skin to keep its body warm.
   a. fats
   b. proteins
   c. sugars
   d. carbohydrates
13. The color of the fur of the .... changes from gray to bright white in winter.
   a. fennec fox
   b. arctic fox
   c. fish cat
   d. bat
14. Most sharks live in ....
   a. swamps
   b. fresh water
   c. salty water
   d. ponds
15. Acacia leaves secrete a .... substance that makes it taste bad.
   a. nutritious
   b. sugary
   c. salty
   d. poisonous

Answers:

8. d	9. d	10. a	11. d
12. a	13. b	14. c	15. d

16. The length of the kapok tree exceeds .... m.
   a. 35 b. 70
   c. 15 d. 22
17. Behavioral adaptations of the fennec fox include its ....
   a. big ears b. panting
   c. fur color d. sharp teeth
18. Behavioral adaptations of the arctic fox include ....
   a. its short legs b. its thick fur
   c. its fur color change d. it hiding in warm burrows
19. The panther chameleon can move its eyes in ....
   a. one direction b. a perpendicular direction
   c. two different directions at the same time
   d. a vertical direction
20. The importance of the leaves of the water lily plant is ....
   a. absorbing the sunlight b. absorbing water
   c. steadfastness in water
   d. preventing fish from reaching the plant
21. The alimentary canal begins with the opening of the .... and ends with the opening of the .... respectively.
   a. mouth, intestine b. intestine, anus
   c. mouth, anus d. anus, mouth
22. Human obtains the required .... for the body's systems functions.
   a. energy b. water
   c. sugar d. minerals

Answers:

16. b 17. b 18. d 19. c
20. a 21. c 22. a

23. The structural adaptations of the water lily plant include the ....

a. taproots
b. transverse roots
c. wide leaves
d. all the previous

24. Some plants grow taller to get ....

a. light
b. water
c. salts
d. dissolved sugar

25. The .... system breaks up the food to make use of it.

a. circulatory
b. respiratory
c. digestive
d. nervous

26. The process of digesting food begins in the ....

a. small intestine
b. large intestine
c. esophagus
d. mouth

27. The stomach of cows contains ....

a. four chambers
b. one chamber
c. three chambers
d. two chambers

28. Returning back the food from the second stomach to the mouth for chewing again is called the ....

a. approach
b. hiding
c. rumination
d. feeding

29. The true stomach in cows is the .... chamber.

a. first
b. second
c. third
d. fourth

30. The third chamber in a cow's stomach is called the ....

a. hood
b. rumen
c. mother of mother of gyrus
d. rennet

Answers:

23. c	24. a	25. c	26. d
27. a	28. c	29. d	30. c

31. The first and second chambers in cows are called ...., respectively.

a. the hood and the real

b. the rumen and the hood

d. the mother of the gyrus and the hood

d. the mother of the gyrus and the rumen

32. Dogs' teeth are distinguished with .... for tearing meat.

a. pointed sharp edges
b. front extended shape
c. sharp incisors
d. all the previous

33. Cows have .... teeth that are suitable for eating grass.

a. pointed
b. flat
c. sharp
d. extended

34. The diaphragm contracts and descends in the process of ....

a. inhalation
b. exhalation
c. walking
d. sleeping

35. The air coming out of the lungs contains .... gas during the exhalation process.

a. oxygen
b. carbon dioxide
c. nitrogen
d. hydrogen

36. Fish breathe oxygen dissolved in water by their ....

a. lungs
b. trachea
c. gills
d. skin

Answers:

31. b	32. a	33. b	34. a
35. b	36. c		

2 Complete the following:

1. The fennec fox has a big ear .... to increase the sense of hearing.
2. The bat is one of the .... animals and it sleeps in a/an .... position.
3. Bats depend on .... phenomenon to catch the preys.
4. The polar bear has a dense .... and a layer of fat under its skin to warm its body.
5. The ear of the fennec fox increases the sense of .... and it regulates the .... of its body.
6. The polar bear has .... colored fur, while the forest bear has .... colored fur.
7. The color of the arctic fox fur changes from the .... color to the .... color to hide among the snow.
8. Polar bear feeds on .... and ....
9. There are two types of adaptation, they are .... and ....
10. The big ears in the fennec fox are a .... adaptation, while the panting is a .... adaptation.
11. Foxes eat all kinds of food. This is considered a .... adaptation.
12. Bull sharks resort to a strategy of camouflage called ....

Answers 2:

1. pinna
2. nocturnal, upside-down
3. echolocation
4. fur
5. hearing, temperature
6. white, black or brown
7. grey, shiny white
8. dead whales, fish
9. structural, behavioral adaptations
10. structural, behavioral
11. behavioral
12. Countershading

13. The panther chameleon lives in the .... habitat, while the Agama lizard lives in the .... habitat.
14. Reptiles are .... blooded animals.
15. The paws of the panther chameleon resemble the .... letter during movement.
16. The .... tree and the .... tree belong to the giant trees.
17. The buttress roots in kapok trees are a .... adaptation.
18. The mangrove tree grows in the .... habitat, while the water lily grows in the .... habitat.
19. The roots of the mangrove help it to hold on in the ...., while the roots of the palm help it to hold on in the ....
20. The alimentary canal begins with the opening of the .... and ends with the opening of the ....
21. The .... enzyme and the .... enzyme are poured on the liquid food inside the small intestine and they decompose food into nutrients.
22. The human body obtains .... from the nutrients necessary for the functioning of the body's systems.
23. The digestive system of cows contains .... chambers.

Answers:

13. dry desert, forest
14. cold
15. V
16. acacia, kapok
17. structural
18. salty water, swamps
19. strong waves, strong winds
20. mouth, anus
21. liver, pancreas
22. energy
23. four

24. The first stomach in cows is called ...., the second stomach is called ...., the third stomach is called .... and the fourth stomach is called ....
25. Teeth in cattle are .... to fit the grass they eat, while dogs' teeth are .... to fit the meat they eat.
26. The breathing process includes .... and ....
27. During inhalation, the .... contracts downwards, causing widening of the .... pushing the oxygen-rich air into the lungs.
28. Fish breathe through their ...., while humans breathe through their ....
29. .... is a disease that attacks human if he breathes polluted air.
30. Amphibians breathe through their .... and ....
31. The .... is an example of the structural adaptation of mangrove plant.
32. The undigested food comes out of the human body through the .... opening.
33. The bull shark has a .... back and a .... belly to sneak up on the prey.
34. .... and .... are examples of behavioral adaptations of living organisms.
35. Food is absorbed into the walls of the .... that are rich in ....

Answers:

24. hood, rumen, mother of gyrus, actual
25. flat, sharp
26. inhalation, exhalation
27. diaphragm, chest cavity
28. gills, lungs
29. Asthma
30. lungs ,skin
31. strong long roots
32. anus
33. black, white
34. Hiding in caves, panting
35. small intestine, tiny blood vessels

3 Write the scientific term:

1. A change that takes place over time and helps animals to survive.
(..)

2. A change that occurs inside the animal's body and helps it survive.
(..)

3. A change in the behavior of an animal or the behavior of a group of animals.
(..)

4. Egyptian mongoose moving from one place to another searching for food and hunting in different environments and eating different types of food.
(..)

5. The camouflage strategy used by the bull shark.
(..)

6. A group of organs in the body of the living organism that perform one function.
(..)

7. Breathing air that is rich in oxygen into the lungs.
(..)

8. The exit of air carrying carbon dioxide from the lungs to outside the human body.
(..)

9. The changes taking place in the environment over the years and decades.
(..)

Answers 3:

1. Adaptation
2. Structural adaptation
3. Behavioral adaptation
4. Foraging
5. Countershading
6. System
7. Inhalation
8. Exhalation
9. Slow environmental changes

10. The fast changes that occur in the environment over several hours or days.

(..)

11. A system that is responsible for breaking down food and absorbing nutrients from it.

(..)

12. A disease attacking the chest as a result of human exposure to large amounts of air pollutants.

(..)

13. One of the structures inside the fish's body. It is responsible for breathing and extracting oxygen from the water.

(..)

14. The gas that is expelled outside the human body as a result of the exhalation process.

(..)

15. A large tree that grows in the Savannah and can withstand many months of drought.

(..)

16. A tree found in the Amazon rainforest. It is provided with buttress roots and hand-shaped leaves.

(..)

17. A type of reptiles whose feet are in the shape of the V letter.

(..)

Answers:

10. Fast environmental changes
11. The digestive system
12. Asthma
13. Gills
14. Carbon dioxide
15. Acacia tree
16. Kapok tree
17. The panther chameleon

4 Put a (✓) or a (✗) for the following statements:

1. To increase the sense of hearing and to cool the body down, the fennec fox has a large ear pinna. ( )
2. Living organisms adapt over time to the environmental changes. ( )
3. The bat sleeps in an upright position to see its preys. ( )
4. Bats help in the plant pollination process. ( )
5. During their flight, bats produce sound waves that bounce back to them to locate their preys. ( )
6. Desert lizards resort to hide in the shady burrows. This is considered a structural adaptation. ( )
7. Panting helps some animals to cool down their bodies. ( )
8. Penguins live in hot tropical forests. ( )
9. The feet of the penguin are warm because they are covered with thick feathers. ( )
10. Polar bears have thick fur and a layer of fat under their skin to keep them warm. ( )
11. There are two types of adaptation, structural and functional adaptations. ( )
12. Both the fennec fox and the arctic fox live in a dry desert climate. ( )
13. Resorting of the fennec fox to panting to cool its body is considered a behavioral adaptation. ( )
14. One of the structural adaptations of the arctic fox is to hide inside the warm burrows. ( )

Answers 4:

1. ✓	2. ✓	3. ✗	4. ✓
5. ✓	6. ✗	7. ✓	8. ✗
9. ✗	10. ✓	11. ✗	12. ✓
13. ✓	14. ✗		

15. The bull shark has a black back and white belly, which helps it to hide. ( )
16. The Agama lizard lives in dry deserts, while the panther chameleon lives in the tropical forests. ( )
17. Lizards are a type of cold-blooded reptiles. ( )
18. The shape of the feet of the panther chameleon is considered a structural adaptation. ( )
19. The eyes of the panther chameleon move in two different directions at the same time. ( )
20. The panther chameleon has no defense, but it tries to look fierce in front of its predator. ( )
21. The root of the acacia tree extends deep into the ground 70 meters to reach the underground water. ( )
22. The acacia tree stores water in its leaves to be consumed when needed. ( )
23. Acacia tree leaves produce poisons that taste terrible when eaten by animals. ( )
24. The buttress roots of the kapok tree extend to a short distance below the earth's surface. They grow upwards until reaching the tree trunk. ( )
25. The long and strong roots of the mangrove tree is considered a structural adaptation. ( )
26. The human stomach breaks the food down and turns it into a liquid with the help of the digestive enzymes. ( )

Answers:

15. ✓	16. ✓	17. ✓	18. ✓
19. ✓	20. ✓	21. ✗	22. ✗
23. ✓	24. ✓	25. ✓	26. ✓

27. The digestive system of humans, cows and dogs begins at the anus and ends with the mouth. (   )
28. The dog's digestive system has four stomachs that enable it to digest protein. (   )
29. Teeth in cows are flat, while the dog has pointed canines. (   )
30. The rib cage expands upwards during inhalation, while the diaphragm contracts. (   )
31. Carbon dioxide gas is expelled with the air out of the body in the process of exhalation. (   )
32. Fish breathe oxygen through the lungs. (   )
33. Environmental changes vary between fast and slow. (   )
34. Amphibians breathe by both their lungs and skin outside and inside the water. (   )
35. Amphibians live in moist habitats. (   )



Answers:

27. ✗ 28. ✗ 29. ✓ 30. ✗
31. ✓ 32. ✗ 33. ✓ 34. ✓
35. ✓

5 Write the scientific reason:

1. Fennec fox has a very large pinna.

....

....

2. Bats can hunt their prey in the dark.

....

....

3. The desert lizard keeps its body cool from the desert heat.

....

....

4. The fennec fox resorts to panting.

....

....

5. The penguin keeps its feet warm despite standing in the snow.

....

....

Answers 5:

1. To increase its sense of hearing and to cool its body down.
2. Because they produce sound waves and when these waves collide with the prey, they bounce back to the bat, which helps the bat locate and hunt them.
3. Because it resorts to its shady, damp burrows during the day.
4. To cool the fox's body down.
5. By the movement of blood within the blood vessels; some blood vessels carry cold blood from the feet, other blood vessels carry warm blood from the rest of the body. These blood vessels wrap around each other and when they touch, heat transfers from the warm blood to the cold blood, and therefore the warm blood flows to the penguin's feet, it gets enough warm blood to keep its feet from freezing.

6. The polar bear adapts to the extreme cold in the polar region.

....

....

7. The camel overcomes the scarcity of water in the desert.

....

....

8. Fennec fox has brown fur.

....

....

9. Fennec foxes resort to their shady burrows during the daytime.

....

....

10. Arctic fox has thick fur.

....

....

11. The ears and short legs of an arctic fox are important to its life.

....

....

Answers:

6. Because of the thick fur that covers its body, in addition to the layer of fat that is located under its skin.
7. Because it rarely sweats and it drinks a lot when it finds water.
8. To be colored with the color of desert sand to help it hide from the eyes of the preys and predators.
9. To overcome the extreme rise in temperature at the daytime and to cool their bodies down.
10. To overcome the cold weather in the tundra or the cold desert.
11. To strengthen its sense of hearing and warm its body.

12. The bull shark has a black back and a white belly.

....

....

13. The body of the panther chameleon is covered with shiny scales.

....

....

14. The feet of the panther chameleon resemble the letter V.

....

....

15. The eyes of the panther chameleon move in two different directions at the same time.

....

....

16. The tap root of the acacia tree extends deep into the soil for a long distance.

....

....

17. The acacia tree stores water in its trunk.

....

....

Answers:

12. So that no one that swims above or below the shark can see it.
13. To be colored with the same color of the tropical habitat that contains many green leaves and blooming flowers, which helps it to hide.
14. To help with its balance and fast movement while hunting.
15. To search for food and to monitor its surroundings in order to hide and not to be an easy prey.
16. To reach the groundwater deep in the soil in order to overcome water scarcity.
17. To consume it when water is scarce and the plant is in need.

18. The acacia tree produces poisons.

....

....

19. The roots of mangrove tree are long and strong.

....

....

20. The liver and pancreas secrete food enzymes into the small intestine.

....

....

21. The teeth of cows are flat, while the teeth of dogs are sharp.

....

....

22. The diaphragm contracts downwards during inhalation.

....

....

23. The diaphragm relaxes upwards during exhalation.

....

....

Answers:

18. To make the leaves of the plant taste terrible.
19. To withstand the strong waves.
20. To break down food into nutrients.
21. The teeth of cows are flat to match the grass they are eating, while the dog's teeth are sharp so that it can tear meat.
22. To help the chest cavity to expand and allow the rush of oxygen from the air to the lungs, which become inflated.
23. To help the relaxation of the chest cavity and to push the air containing carbon dioxide gas out of the lungs and outside the body.

6 What happens in the following cases...?

1. The panther chameleon is in danger.

....

2. The acacia tree leaves do not produce poisons.

....

3. The Barbary fig has on sharp spines.

....

4. Cows lose the ability to ruminate.

....

5. The diaphragm does not contract downwards during the inhalation process.

....

6. The diaphragm does not extend upwards during the exhalation process.

....

Answers 6:

1. It opens its mouth to look wide, and its scales change colors, making it look fierce. It looks at different directions to monitor the danger.
2. These trees become food for the hungry animals because they would taste natural.
3. It will become food for the animals.
4. The cows' stomachs can't digest the grass, hence no energy would be obtained, so their bodies would become weak.
5. No air containing oxygen would be rushed into the lungs, so the inhalation process would not be complete.
6. No air containing carbon dioxide gas would be rushed out of the body, so the exhalation process would not be complete.

7 Compare between:

1. The fennec fox's ears and the penguin's feet, in terms of maintaining their body temperature.

Fennec Fox's Ears	Penguin's Feet

2. The fennec fox and the arctic fox in terms of: (a) The environment. (b) The color of the fur.

Fennec Fox	Arctic Fox

3. The acacia tree and the kapok tree in terms of: (a) The roots in each of them. (b) The roots importance.

Acacia Tree	Kapok Tree

Answers 7:

1.

Fennec Fox's Ears	Penguin's Feet
They work to cool the body of the fennec fox down.	They help the feathered penguin body to get rid of the excess heat.

2.

Fennec Fox	Arctic Fox
It lives in the hot desert. It has brown fur.	It lives in the cold desert or Tundra. It has white fur.

3.

Acacia Tree	Kapok Tree
The tap roots extend deep into the ground. The roots go deeper into the soil to search for water.	The buttress roots grow in the soil and they go upwards until they reach the trunk of the tree to support the tree.

8 What is meant by...?

1. Adaptation: ....
2. Structural adaptation: ....
3. Behavioral adaptation: ....
4. Countershading: ....
5. Rumination: ....
6. Inhalation: ....
7. Exhalation: ....
8. The slow environmental changes: ....
9. The fast environmental changes: ....
10. ARC: ....

Answers 8:

1. Adaptation: It is a change that occurs over time. It helps the living organism to survive.
2. Structural adaptation: A change that occurs inside the body of the living organism.
3. Behavioral adaptation: The change that occurs to the behavior of a living organism or a group of living organisms.
4. Countershading: It is the strategy of camouflage of the bull shark, which does not enable the creatures that swim above or below it to see it.
5. Rumination: It is the return back of food from the second stomach of the cow to the mouth to be chewed and digested again.
6. Inhalation: The entrance of air containing oxygen gas to the lungs.
7. Exhalation: The exit of air containing carbon dioxide gas out of the lungs.
8. The slow environmental changes: The changes that are caused by human activity over the course of days, years and decades.
9. The fast environmental changes: The changes that occur in the environment. It may cause the extinction of an organism.
10. ARC: Amphibian rescue and protection project in Gambo city, Republic of Panama.

Concept 2-1
Senses at Work

Remember that:

Reception of animals to stimuli:

* Firstly: Receiving influences from the environment sensory receptors. The eyes, nose, ears, tongue, skin receive external stimuli, and send a nerve signal for this stimulus to the brain.
  Nerve signals: They are electrical impulses that pass quickly through the nerves.
* Secondly: Information processing and perceiving. The brain processes the information that has reached it, and perceives the meaning of this information (the living organism perceives the concept and meaning of the influencer).
* Thirdly: Response and proper reaction to the influencer.
  The brain sends a signal that passes through the spinal cord to one of the body organs to take over the appropriate response and answer to the stimulus, whether by movement or speech...etc.

Example 1: Smell is an important part of our survival.
When the nose smells the odor of delicious food (baked pizza in the oven for example), the nose receives the odor and then sends a message (nerve impulse) to the brain which processes the information and determines that it is pizza, it sends a message (nerve impulse) to the salivary glands to secrete saliva.

Example 2: Smell is an important part of the bats and dolphins survival.
Bats and dolphins navigate and find their preys using echolocation. When a dolphin or a bat makes a sound, it spreads in the air. The sound produced by bats and dolphins bounce off the objects in their habitats. When this sound hits a surface (a prey for example), the echo bounces back so the dolphins and bats ears receive the echo and the brain determines the location of the prey.

General conclusion for the two previous examples:
The sensory receptors receive the external stimuli from the surroundings and then transmit these stimuli to the nervous system, which processes and perceives them. Then, it takes over the various parts of the body through a message (nerve impulse) from the brain to respond appropriately.

1 Choose the correct answer from the given answers:

1. Living things communicate with each other through ....
   a. sound b. movement
   c. sleeping d. a and b together
2. A dolphin uses the .... phenomenon to protect itself and to get food.
   a. echo b. refraction
   c. diffraction d. dispersion
3. A dolphin is similar to .... in the way they locate objects.
   a. Egyptian mongooses b. owls
   c. bats d. a and b together
4. The elephant uses its sense of .... to search for food.
   a. vision b. hearing c. smell d. taste
5. When you search for something in the dark, you will use your sense of ....
   a. vision b. hearing
   c. smell d. all the previous
6. Snakes have the ability to sense heat in part of their ....
   a. tails b. backs c. skins d. faces
7. The two strong senses that owls have are .... and ....
   a. vision, smell b. smell, taste
   c. vision, hearing d. hearing, touch
8. The bat depends on .... to locate the prey.
   a. vision b. echo c. touch d. smell

Answers 1:

1. d	2. a	3. c	4. c
5. b	6. d	7. c	8. b

9. An owl can move its head ....
   a. in all directions
   b. forward
   c. downwards
   d. all the previous

10. In mammals, the nervous system consists of ....
   a. the brain
   b. the spinal cord
   c. the nerves
   d. all the previous

11. The Egyptian jerboa is active at night (nocturnal activity) to escape from ....
   a. the extreme heat during the day
   b. the bright light
   c. its predators
   d. all the previous

12. The legs of the Egyptian jerboa are similar to the legs of ....
   a. owls
   b. kangaroos
   c. mongooses
   d. bats

13. The jerboa belongs to ....
   a. insects
   b. reptiles
   c. birds
   d. rodents

14. The very strong sense owned by the jerboa is the .... sense.
   a. touch
   b. smell
   c. hearing
   d. vision

15. The importance of the nervous system includes ....
   a. collecting information
   b. transmitting the signals to body parts
   c. responding to the stimuli after perceiving it
   d. all the pervious

16. Humans have sensory receptors that are .... and ....
   a. nose, ear
   b. vision, hearing
   c. eye, nose
   d. a and c together

Answers:

9. a	10. d	11. a	12. b
13. d	14. c	15. d	16. d

2 Complete the following:

1. While moving, Egyptian mongoose produces .... sounds to communicate with other members of its species.
2. Dolphins have a very powerful sense of .... to locate (GPS) the things in their way of movement.
3. Both .... and .... are similar with one another in the method of locating objects by using the echo phenomenon.
4. In their hunt, snakes depend on the sensation of the .... produced from the prey.
5. An owl can move its head in all .... to search for preys.
6. An owl picks up distant sounds because its head resembles a ....
7. The nervous system of mammals consists of the brain, the .... and the ....
8. The leg of the Egyptian jerboa is similar to the leg of the .... so it can jump.
9. To identify the type of food prepared by a restaurant, the appropriate sense you use for that purpose is the sense of ....
10. The jerboa is able to avoid the danger of snakes due to the strength of its sense of ....

Answers 2:

1. chatter
2. hearing
3. dolphins, bats
4. heat
5. directions
6. dish
7. spinal cord, nerves
8. kangaroo
9. smell
10. hearing

3 Write the scientific term:

1. A group of sounds made by the Egyptian mongoose during its movement to communicate with members of its species.

   (..)

2. A phenomenon that both dolphins and bats depend on for positioning.

   (..)

3. The main control center in the animal body or organism.

   (..)

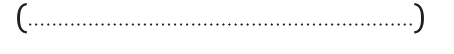
4. It transmits signals from the receptors to the brain and from the brain to all parts of the body.

   (..)

5. The period of time it takes for an organism to react when it senses danger.

   (..)

6. Organs in the body of an organism that receive external influences from the environment.



Answers 3:

1. Chatter
2. Echo
3. Brain
4. Nerves
5. Reaction time
6. Sensory receptors

4 Correct the underlined words in the following statements:

1. Dolphins make sounds like chatter to communicate with members of their species.
2. The bat is similar to the snake in relying on the phenomenon of echo to determine its locations.
3. There is a certain part of the snake's tail that can sense heat.
4. The owl's lens-like face catches faint sounds.
5. The spinal cord passes through a canal in the arm bones.
6. The nerves that come out of the brain directly are the ones that reach the arm and the hand.
7. The jerboa's sense of smell is very strong.
8. The response time of the jerboa occurs in less than a fraction of an hour.
9. From the sensory receptors in the human is the stomach.
10. Nerve signals are heat impulses that pass through the nerves.

Answers 4:

1. Mongooses
2. dolphin
3. face
4. bowl
5. vertebral column
6. eyes and the heart
7. hearing
8. a second
9. eyes and nose
10. electric

5 Put a (✓) or a (✗) for the following statements:

1. The Egyptian mongoose makes noise-like sounds to communicate with the members of its species. (   )
2. The sense of hearing is one of the most important senses that a dolphin possesses. (   )
3. When the sound made by a dolphin returns back to it from an object, the dolphin can determine the object location. (   )
4. A dolphin's sense of vision is vanished. (   )
5. Dolphins are similar to bats in the way they locate objects. (   )
6. Sensory receptors perceive the influences of the external environment. (   )
7. Snakes can feel the heat emitted from the prey's body in a part of their faces. (   )
8. The bowl-like face of the owl distracts the sounds. (   )
9. An owl's ear amplifies the sounds it reaches. (   )
10. The spinal cord extends from the brain into a canal inside the vertebral column. (   )
11. Egyptian jerboa is a type of small reptiles. (   )
12. The jerboa's sense of smell enables it to smell the scent of its predators. (   )
13. The reaction time of the jerboa is less than a fraction of a second. (   )
14. The brain processes the information that it receives and understands its meaning. (   )

Answers 5:

1. ✗	2. ✓	3. ✓	4. ✗
5. ✓	6. ✗	7. ✓	8. ✗
9. ✓	10. ✓	11. ✗	12. ✗
13. ✓	14. ✓		

6 Write the scientific reason for each of the following:

1. The Egyptian mongoose can communicate with the members of its species while moving.

   ....

   ....

2. The dolphin can protect itself and secure its food in the dark bottom of the ocean.

   ....

   ....

3. The desert nocturnal animals are only active at night.

   ....

   ....

4. The snake can hunt in the dark despite of the lack of vision.

   ....

   ....

5. A bat can fly and hunt its prey in the dark without hitting surfaces.

   ....

   ....

Answers 6:

1. Because of the chatter-like sounds it makes during its movement, which is a means of communicating with the members of its species.
2. Because it emits sound waves in the dark, and when the waves hit an object, they bounce back to the dolphin.
3. To escape the very high daytime temperature, in addition to this, their sense of vision can work efficiently in the dark.
4. Because there is a certain part in the face of the snake that receives heat from the prey and determines the prey's location.
5. Because the bat emits sound waves in the dark, and when the sound waves hit an object, they bounce back to the bat.

6. An owl can hear the sound of its prey, no matter how weak it is.

....

....

7. The jerboa can avoid snakes while hunting at night.

....

....

7 Compare between:

Owls and bats, in terms of using their sense of hearing.

Owls	Bats

Answers 6:

6. Because its face is like a bowl that receives and directs these sounds. The ears of the owl amplifies these sounds, so it can hear the sounds clearly. Then, it turns its head towards the source of the sound and determines with its strong eyes the location of the prey.
7. When the snake makes noise, the sensory receptors in the jerboa's ear send a message to the brain that translates this message sending a response to the jerboa's legs to jump in a zigzag path.

Answers 7:

Answer by yourself.

8 What happens in the following cases...?

1. The snake approaches its prey at night.

....

....

2. The owl picks up the weak noise of the hiding prey.

....

....

3. The nose sniffs the smell of delicious food.

....

....

4. A snake approaches the jumping jerboa.

....

....

5. You hear a chirping bird.

....

....

6. The Egyptian mongoose produces a chatter sound.

....

....

Answers 8:

1. The snake senses the heat of the prey and locates it.
2. Its bowl-shaped face receives these sounds and directs them to the ear, which amplifies the sound. It turns its head towards the sound source, then it determines the location of the prey.
3. The nose sends nerve impulses through the nerves to the brain, which perceives the smell and determines the type of food.
4. The jerboa hears the sound of the snake and sends a message to the brain, so it senses the danger, then the brain sends a message to the legs of the jerboa to jumbo away from the snake.
5. The nerves in my ears send a message to the brain, the brain makes sense of the sound waves and the brain sends a message to the body about what to do, such as turning to look for the sound source.
6. It communicates with the members of its species.

9 What is meant by...?

1. Chatter sound produced by the Egyptian mongoose.

....

....

2. Echo.

....

....

3. The neural message.

....

....

4. Reaction time.

....

....



Answers 9:
Answer by yourself.

Concept 3-1
Light and the Sense of Sight

Remember that:

Light: It is the visible form of energy that is transmitted in the form of waves.

The fall of light on objects:

When light falls on an object, this object may:

1. absorb part of the falling light.
2. allow another part of the light energy to pass through.
3. reflect part of the light.

Opaque objects: They are objects that do not allow light to pass through them, such as the human body.

In the case of an opaque object: When light falls on an opaque object, such as a human body, it absorbs most of the light falling on it, and reflects another part, which results in the formation of a shadow of the body (any body that has a clear shadow is an opaque body).

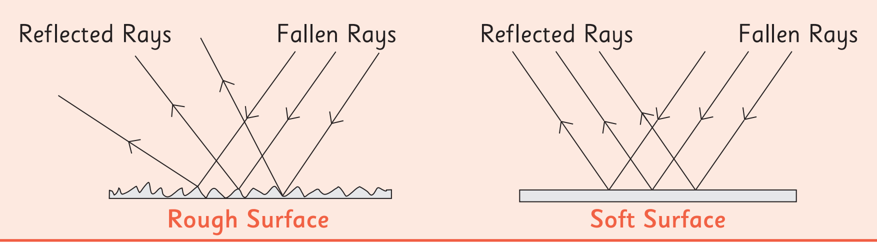
Transparent objects: They are objects that allow light to pass through them, such as: air, water, glass, lenses.

In the case of a transparent object: When light falls on a transparent object, it allows all or most of the light to pass through it.

* The way light is reflected from an object depends on how soft it is.

Types of light reflection:

1. The Regular Reflection: When light rays fall on a soft surface, such as: (mirror - intact mobile phone screen), the reflected rays are all reflected in one direction.
2. The Irregular Reflection: When light rays fall on a rough surface, such as: (a painted wall - a piece of wood), the reflected light rays are reflected in different directions.



Remember that:

* Many nocturnal animals have a **mirror-like** layer behind the retina, called the **tapetum**.
* Tigers and lions have **third eyelids** to protect the delicate eye area when attacking a prey.

Q 1: What determines the amount of light entering the eye?

Answer:

A pupil: The pupil is the **opening** at the **center** of the **iris** through which light passes. The iris adjusts the size of the pupil to control the amount of light that enters the eye.

* Staring at bright lights can damage your eyes.

Q 2: What does your vision depend on?

Answer:

Vision is the ability to see light. It depends on the **eyes** in detecting light and forming images. It also depends on the **brain** making sense of the images, so that we know what we are seeing.

Q 3: What is the name of the structure in the eye that allows dogs, cats and many other mammals to have better night vision than humans?

Answer:

Dogs' eyes, as those of other species active at night, have the **tapetum lucidum** located behind the retina to reflect incoming light and thus **increase night vision**.

Q 4: Which animal cannot see at night?

Answer:

The animal which cannot see at night is the **cow**.

Tigers, owls, and mouses are animals who can see in the dark. On the other hand, the cow is the animal who cannot see in the dark. It can see things in light only.

Q 5: Can elephants see?

Answer:

The sight of an elephant is **quite poor** and they can only see for **short distances** of up to **20** meters.

Q 6: What animal sees best in the dark?

Answer:

Owls see best in the dark.

1 Choose the correct answer from the given answers:

1. The .... belong(s) to light sources.
   a. sun b. fan c. electric lamp d. a and c
2. .... must be there for the eye to see.
   a. Sound b. Light c. Air d. Water
3. It is difficult for a person to see in the .... light.
   a. sun b. electric lamp c. faint stars d. eye
4. The .... eye glows in the dark, allowing it to see at night.
   a. fishing cat's b. mouse's c. bat's d. human's
5. All of the following have a membrane behind the retina, except for ....
   a. cats b. tigers c. humans d. lions
6. One of the senses that helps the nocturnal animal hunt in the dark is the ....
   a. sight b. smelling
   c. hearing d. all the previous
7. Tarsier monkey can see clearly in the dark because ....
   a. it has no tail
   b. its eyes are big
   c. it can rotate its head 180°
   d. both b and c together
8. The eye's sight sense of objects depends on the property of light ....
   a. reflection b. diffraction
   c. interference d. dispersion

Answers 1:

1. d	2. b	3. c	4. a
5. c	6. d	7. d	8. a

9. The light-sensitive layer in the wall of the human eye is the ....
   a. iris b. retina c. cornea d. lens
10. Behind the retina of the nocturnal animals there is a special tissue layer called ....
   a. retina b. choroid
   c. tapetum lucidum d. cornea
11. The transparent object(s) among the following is/are ....
   a. water b. air
   c. glass d. all the previous
12. An opaque body has a shadow because ....
   a. it allows light to pass through
   b. it absorbs most of the light falling on it
   c. it reflects part of the light falling on it
   d. b and c together
13. The eye .... focuses the light on the retina.
   a. lens b. pupil c. lid d. iris
14. Body sight perception is achieved when a message arrives at the ....
   a. eyes b. brain c. nerves d. retina
15. .... is one of the sight defects.
   a. Blurry vision
   b. Distorted vision of nearby objects
   c. Distorted vision of distant objects
   d. all the pervious

Answers:

9. b	10. c	11. d	12. d
13. a	14. b	15. d	

2 Complete the following:

1. Among the sources of light that enable us to see are the .... and ....
2. It is difficult for a person to see in .... and in order to be able to see, he/she can wear ....
3. Some animals, such as .... and .... can see in the dark.
4. The senses of .... and .... help the nocturnal animals in hunting in the dark in addition to the sense of sight.
5. The tarsier monkey has eyes as big as the .... eyes, it can rotate its head at an angle of ....
6. There is a relationship between the light and the sense of ....
7. The visible image of energy is .... which is transmitted in the form of ....
8. The tissue that is sensitive to light and it is found in the wall of the human eye is known as the ....
9. The transparent tissue in the eyes of the nocturnal animal acts like a .... that reflects the light that the .... did not detect.
10. An example of dark objects is the ...., while .... is an example of transparent objects.
11. The types of light reflection are .... and ....
12. The eye .... focuses the light falling on it on the ....
13. Among the sight defects is the .... and ....
14. Vision defects can be treated by wearing .... or having surgery using the .... technology.

Answers 2:

1. sun, electrical lamps
2. dim light, night vision devices
3. fishing cats, owls
4. hearing, smell
5. owls, 180°
6. sight
7. light, waves
8. retina
9. mirror, retina
10. human body, air
11. regular, irregular reflections
12. lens, retina
13. blurry vision, distorted vision of nearby objects
14. medical glasses, laser

3 Write the scientific term:

1. The phenomenon that the eye depends on to see objects. (..............................)
2. One of the effects of the external environment and it must be present in order for the eye to be able to see. (..............................)
3. The visual form of the energy that travels in the air in the form of waves. (..............................)
4. A sensitive tissue in the wall of the human eye that collects light. (..............................)
5. A tissue behind the retina of the nocturnal animals. It reflects light to increase vision. (..............................)
6. The scientific phenomenon that makes the fishing cat eyes glow in the dark. (..............................)
7. A living creature with big eyes like an owl and it turns its head at an angle of 180°. (..............................)
8. Materials that reflect light in several directions. (..............................)
9. Materials that reflect light in one direction. (..............................)
10. A structure in the eye that collects light on the retina. (..............................)
11. Objects that do not allow light to pass through and have a shadow. (..............................)
12. Objects that allow light to pass through. (..............................)
13. One of the defects of vision, which makes the vision distorted due to a defect in the lens. (..............................)

Answers 3:

1. Reflection
2. Light
3. Light energy
4. Retina
5. Tapetum lucidum
6. Reflection
7. Tarsier monkey
8. Rough materials
9. Smooth soft materials
10. Lens
11. Opaque objects
12. Transparent objects
13. Blurry vision

4 Put a (✓) or a (✗) for the following statements:

1. The greater the amount of light falling on the eye, the clearer the vision. ( )
2. It is difficult for a person to see in the bright light where bright light hurts the eye. ( )
3. Tigers and lions have a transparent membrane in the composition of their eyes. ( )
4. The pupil of the nocturnal animal is narrow and it enables it to see well. ( )
5. The retina interprets information and sends signals to the muscles of the body. ( )
6. The eye's vision sense of an object depends on the amount of light penetrating the object only. ( )
7. The lens of the human eye focuses light on the retina. ( )
8. The eye sends a signal to the brain when seeing to interpret information. ( )
9. Reindeers, horses, cats and dogs have a transparent membrane to increase the sense of vision. ( )
10. The transparent membrane absorbs light to increase the animal's sense of vision. ( )
11. The opaque objects allow light to pass through them, so they have a shadow. ( )
12. Taste is one of the senses that helps the nocturnal animal to hunt in the dark. ( )
13. One of the visual defects caused by a defect in the lens is blurry vision. ( )
14. A dark place in the air contains a very small amount of light. ( )

Answers 4:

1. ✓	2. ✓	3. ✓	4. ✗
5. ✗	6. ✗	7. ✓	8. ✓
9. ✓	10. ✗	11. ✗	12. ✗
13. ✓	14. ✓		

5 Correct the underlined words in the following statements:

1. The eye's vision of objects depends on the phenomenon of refraction of light.
2. In order for a person to see in the dark, he/she must wear medical glasses to help him/her gather light.
3. The transparent membrane in the cat's eye acts as a lens that refracts light for the retina.
4. The fishing cat's eye glows due to the presence of a lens behind the retina in the eye.
5. A tarsier monkey can move its eyes at an angle of 180°.
6. The cornea in the human eye focuses light onto the retina.
7. A regular reflection occurs when light falls on a piece of wood.
8. Transparent objects have a shadow because light does not pass through them.
9. The perception of seeing objects is achieved when the eye's message reaches the retina.
10. When the lens of the eye does not work properly, color blindness occurs.
11. Light energy is transmitted through the air in the form of successive batches.
12. The structure of the human eye is similar to that of a nocturnal animal.

Answers 5:

1. reflection
2. night vision devices
3. a mirror that reflects
4. transparent tissue (tapetum lucidum)
5. head
6. lens
7. glass plate
8. Opaque
9. brain
10. blurry vision
11. waves
12. different

6 Write the scientific reason:

1. It is difficult for a person to see in the dark.

....

....

2. A tarsier monkey can see in dim light.

....

....

3. Rough objects scatter light falling on them after being reflected.

....

....

4. A shadow forms when light falls on an opaque object.

....

....

5. The fishing cat's eyes glow at night.

....

....

6. The retina plays an effective role in the human eye.

....

....

Answers 6:

1. Because light (that is reflected by the eye) does not reach objects and because the human eye is made to see in light only.
2. Because of its large eyes that collect any light around it, to form a clear image of the surroundings around it in addition to rotating its head by 180°.
3. Because of the irregular reflection.
4. Because the opaque objects do not allow light to pass through, so a shadow is formed.
5. Due to the presence of the transparent membrane (Tapetum Lucidum) that reflects light that is not detected by the retina.
6. Because the retina converts the light that the eye has captured into electric signals that the brain can process and perceive.

7 Extract the different word and then write what connects the rest of the words:

1. Electrical lamp – fire – sun – candle – flash light. ....
2. Sun – fire – chair – lamp. ....
3. Reindeer – fishing cat – human – owl. ....
4. Lens – glass – retina – tapetum lucidum. ....
5. Cloth – mirror – wood – painted wall. ....
6. Glass plate – wood piece – mirror – stainless steel plate. ....
7. Blurry vision – distorted vision of distant objects – light – distorted vision of nearby objects. ....

8 What is meant by...?

1. Retina ....
2. Eye lens ....
3. Tapetum lucidum ....
4. Regular reflection ....

Answers 7:

1. Sun, (artificial light sources)
2. Chair, (light sources)
3. Human, (strong sense of sight)
4. Glass, (nocturnal animals eye structures)
5. Mirror, (rough surfaces)
6. Wood piece, (smooth surfaces)
7. Light (vision defects)

Answers 8:

1. Retina: a tissue in the wall of the eye that collects light through the lens.
2. Eye lens: a transparent structure of the eye that redirects and focuses light on the retina.
3. Tapetum lucidum: a tissue behind the retina of a nocturnal animal that reflects light that is not detected by the retina, this leads to increasing the ability of the nocturnal animal's eye to see.
4. Regular reflection: it is the reflection of light rays in one direction when they fall on a smooth surface.

5. Irregular reflection
6. Light
7. Opaque bodies
8. Transparent bodies

9 Compare between:

Human - fish cat - tarsier monkey → in terms of: (vision in the dark - type of food).

10 What happens in the following cases...?

1. The absence of the transparent tissue in the nocturnal animal's eyes.
2. The failure of nerve signals from the retina to reach the brain.
3. The failure to wear glasses for those who have vision defects.
4. The total reflection absorption of the light falling on the body.
5. Partial eye lens darkening or partial cataract.

Answers 8:

5. Irregular reflection: it is the reflection of light rays in several directions when they fall on a rough surface.
6. Light: is the visible form of energy that spreads in the form of waves.
7. Opaque objects: they are objects that do not allow light to pass through them, so they form a shadow.
8. Transparent objects: they are objects that allow light to pass through, but do not have a shadow.

Answers 9:

Answer by yourself.

Answers 10:

1. The inability of the nocturnal animal to see in the dark, which reduces its ability to hunt in the dark and threatens its life.
2. The vision is not achieved and the inability of the body to explain what it sees.
3. The lack of good vision.
4. The lack of vision of the body because no light from it reaches the eyes.
5. Blurry vision occurs.

Concept 4-1
Communication and Information Transfer

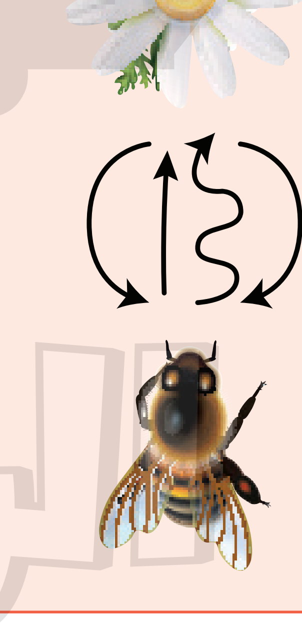
Remember that:

Animals use movement as a way of communication.

Humans and animals use sound and light as a means of communication.

Organisms may use movement as a means of communication, for example:

* You may wave to a friend from a distance and he/she will understand that you are welcoming him/her.
* You may shake your head to a colleague during a discussion, and he/she will understand that you agree or disagree with his/her opinion.



Bees use movement to communicate:

Bees communicate with each other as follows:

Using the vibration of the wings, when the bee rotates around itself in a pattern in the form of the number (8), it is thus telling the bees the correct direction and distance to food.

Remember that:

Communication among honey bees:

* Bees in their hives can communicate with each other using **motion** or **dancing**.
* The way of dancing tells other bees the **direction** and **distance** to **food** and **water resources**.

The bees in the hives **interpret** the **code** and read it, then fly off to the specified location.

Coding with honey bees:

1. The bee makes **one round dance** if the flower is very **near**.
2. The bee makes a **waggle dance** if the flower is **far away**.

Q 1: Where do bats live in caves?

Answer:

Caves provide the kind of **protected shelter** in which bats can thrive. Hanging from the ceiling of a cave, bats are out of reach of most of their predators. Most species of bats live in **large colonies**.

Q 2: Can bats be in light?

Answer:

Bats **do not like** lights. During daytime, when the light is so clear, the vision of bats is **not good enough** for them to be able to pick up predators. If bats come out during the day, they will be picked off very easily. Bats do not like light and they will avoid it as much as possible.

The Sinai agama:

It is an agamid lizard. It is active during **daytime** and feeds on **insects** and **plants**. During the mating season, males become a **striking blue** color to attract females. They are able to regulate their body temperature by behavior.

1 Choose the correct answer from the given answers:

1. The firefly or luminous beetle makes light show patterns with the purpose of ....
   a. warning off the predators　　b. attracting the mate
   c. hunting　　d. a and b together
2. Humpback whales communicate with each other by ....
   a. sound　　b. light　　c. touch　　d. smell
3. Morse code uses patterns of ....
   a. sound　　b. light　　c. sound or light　　d. motion
4. Bees can communicate with each other using .... patterns.
   a. motion　　b. sound　　c. touch　　d. light
5. Ants communicate with each other through ....
   a. taste　　b. vision　　c. hearing　　d. smell
6. Scientists have invented the cane to help blind people depending on the .... phenomenon.
   a. refraction　　b. echo　　c. reflection　　d. interference
7. A blind cane transforms the sound waves it receives into ....
   a. dances　　b. lights　　c. vibrations　　d. sounds
8. Both the bat and the blind cane produce ....
   a. low pitched sound waves　　b. light waves
   c. electromagnetic waves　　d. high pitched sound waves
9. Sinai lizards reproduce in ....
   a. late spring　　b. early autumn　　c. early summer　　d. late winter
10. One of the most important reasons for the disappearance of Sinai lizards from their homeland is the ....
    a. plentiful food　　b. plentiful water
    c. habitat destruction　　d. shelter

Answers 1:

1. d	2. a	3. c	4. a	5. d
6. b	7. c	8. d	9. a	10. c

2 Complete the following:

1. Living organisms use the elements of the external environment to communicate with each other, such as .... and ....
2. There is a type of beetle in Thailand that lives on the .... trees and they produce patterns of .... to communicate with each other.
3. The ancient Egyptians made paper from ...., while the ancient Mayans made paper from the ....
4. The ancient Egyptians invented the .... writing which consisted of 700 symbols.
5. The .... writing appeared in Iraq (Mesopotamia) by the year 3000 BC.
6. .... writing appeared in Central America by the .... in 300 BC.
7. The ancient Egyptians made papyrus from ....
8. Humpback whales communicate with each other by ...., while bees communicate with each other through ....
9. The bat uses its .... to see in the dark.
10. Whales produce .... sounds in winter to complete the process of .. ..
11. The blind cane converts the echo sound waves into ....
12. The bee dances one dance if the flower is ...., while it dances three or more dances if the flower is ....
13. The Sinai lizard tongue is .... like chewing gum to help catching the ....
14. In late spring, the color of the male Sinai lizard turns to .... color to attract females.

Answers 2:

1. sound, light
2. mangrove, light flashes
3. papyrus, inner bark of certain trees
4. hieroglyphs
5. cuneiform
6. Hieroglyphs, Maya peoples
7. reeds
8. singing, movement
9. ears
10. high pitched, mating
11. vibrations
12. nearby, far away
13. sticky, prey
14. blue

3 Write the scientific term for each of the following statements:

1. The flashing of thousands of the firefly or luminous beetles together at night in short intervals of time. (..........................)
2. A type of writing invented by the Egyptians in 3000 BC. (..........................)
3. A type of paper invented by the ancient Egyptians from reeds. (..........................)
4. A language invented by the Maya peoples in 300 BC and it consists of 800 symbols. (..........................)
5. A Chinese scientist who invented paper. (..........................)
6. The way by which humpback whales communicate with each other. (..........................)
7. The number of waves that pass a given point within a given time. (..........................)
8. A scientist who has developed a communication system that consists of sound and light patterns. (..........................)
9. A communication system consisting of sound and light patterns represented by a group of dots and dashes. (..........................)
10. The number of dances the bee dances if the flower is near. (..........................)

Answers 3:

1. Light shows
2. Hieroglyphs
3. Papyrus
4. Hieroglyphs
5. Chai
6. Ranges of notes
7. Frequency
8. Samuel Morse
9. Morse code
10. One dance

11. The number of dances the bee dances if the flower is far away.

(..)

12. The sense that a bat depends on to fly in the dark quickly.

(..)

13. A group of ants in charge of searching for food.

(..)

14. A group of ants in charge of gathering food. (..)

15. A group of ants responsible for alerting for the lack of food.

(..)

4 Put a (✓) or a (✗) for the following statements:

1. Beetles communicate in Thailand by making light shows. ( )
2. Beetles in Thailand perform their light shows in order to make people happy. ( )
3. The monkeys communicate by shouting, while the wolves communicate by howling. ( )
4. The written language is one of the most important ways of transmitting human thoughts and giving experiences to the next generations. ( )
5. The language of communication should be understood by the receiver, not the sender. ( )

Answers 3:

11. Three or more dances
12. Hearing
13. Solider ants
14. Nurse ants
15. Scout ants

Answers 4:

1. ✓
2. ✗
3. ✓
4. ✓
5. ✗

6. Cuneiform writing appeared in Central America in 300 BC. ( )
7. Chai created a form of paper using the inner bark of mulberry and bamboo trees. ( )
8. Humpback whales communicate with each other using a single musical note. ( )
9. Whales produce a high pitched sound in the winter and a low pitched sound in the summer. ( )
10. Morse code is a set of sound and light patterns represented by a set of dashes and dots. ( )
11. The single dance in a bee is to vibrate to the right twice and to the left twice. ( )
12. Ants communicate with each other by using sound. ( )
13. The idea of making a cane for the blind is inspired by the movement of a bat in the dark. ( )
14. The blind cane emits low pitched sound waves. ( )
15. The blind cane converts the sound waves received by the echo into vibrations that the blind can feel. ( )
16. Bats don't live in light. ( )
17. The scales that cover the skin of the Sinai lizard help them in keeping water. ( )
18. The Sinai lizard (blue agama) feeds on insects. ( )

Answers:

6. ✗	7. ✓	8. ✗	9. ✓
10. ✓	11. ✗	12. ✗	13. ✓
14. ✗	15. ✓	16. ✓	17. ✓
18. ✓			

5 Correct the underlined words in the following statements:

1. There is a type of beetle in Thailand that lives on acacia trees and emits luminous flashes.
2. Ancient Egyptian hieroglyphic writing consists of 800 symbols, while hieroglyphic writing in Central America consists of 700 symbols.
3. The ancient Egyptians created papyrus from mulberry trees.
4. Humpback whales make random sounds to communicate with each other.
5. Humpback whale produces high pitched sound in summer and low pitched sound in winter.
6. Marine lighthouses encode information in the form of sound signals at night to guide the ships.
7. In the nineteenth century, Chai developed a communication system as a way of communicating among people.
8. Bees use vision to communicate with each other.
9. The more the bees dance, the closer the flowers are to the bees.
10. Ants like to live alone and communicate with each other.
11. Both the bat and the blind cane rely on the interference phenomenon.
12. The blind cane picks up the echo from the body and turns it into lights that the blind can feel.
13. The color of male Sinai lizard turns to green in the mating season.
14. The Sinai lizard stands on its lower limbs so that its belly is higher than the hot rocks until it is high.
15. Sinai lizards feed mainly on small reptiles.

Answers 5:

1. mangrove	2. 700, 800	3. reed trees
4. a wide range of notes	5. low, high	6. light flashes
7. Samuel Morse	8. dancing and shaking	9. farther
10. in colonies	11. echo	12. vibrations
13. blue	14. upper	15. insects and plants

6 Write the scientific reasons for each of the following:

1. The wings of the fireflies can light up.

....

....

2. The fireflies communicate with each other by using the light shows.

....

....

3. The written language is considered as the most important method of communication in the human world.

....

....

4. The code should be understood by everyone including the sender and the receiver.

....

....

5. Humpback whales make high pitched sounds in winter season.

....

....

6. A bat can hunt its prey in the dark.

....

....

Answers 6:

1. Because a certain chemical reaction occurs inside the bodies of these beetles, light is produced due to the illumination of the wings.
2. In order to warn each other from their predators and to complete their mating.
3. Because the written language facilitates communication in the human world and helps him in understanding what has happened in the past and to share ideas with the next generations.
4. In order that neither of them makes a mistake and to clarify the message.
5. To complete the mating process in winter.
6. Because a bat emits high pitched sound waves during its flight. When the sound waves hit the prey, they bounce back to the bat in the form of echo, so the bat can locate its prey.

7. Blind people who use canes can move with ease.

....

....

8. Bats make sounds even when they are not flying.

....

....

9. The Sinai lizard is characterized by having a long and thin body.

....

....

10. The Sinai lizard stands on its front limbs.

....

....

11. The males of Sinai lizards stand on the high rocks.

....

....

12. The males of Sinai lizards are blue in late spring.

....

....

13. The tongue of the Sinai lizard is sticky.

....

....

Answers:

7. Because the echo sound waves are received by the blind cane and transformed into vibrations, which the blind person feels through his thumb, then he can determine the locations of the obstacles.
8. To communicate with each other about food, sleeping and the mates choice.
9. To help it in climbing the rocks and to run over them quickly.
10. So that its belly remains on top of the hot rocks, as it is active in the hottest time of the day.
11. For monitoring the predators and guarding the burrow.
12. To attract the females to complete mating.
13. So that it can catch its prey.

7 What happens in the following cases...?

1. The absence of the chemical reaction inside the bodies of the fireflies.

....

....

2. The language of communication is not understandable for the receiver of the message.

....

....

3. If the bees make one dance.

....

....

4. If the bees make three or more dances.

....

....

5. One of the parts of a communication system consisting of several parts is out of order.

....

....

Answers 7:

1. They lose their ability to light up, as a result they lose their ability to communicate. Also, they could not warn others from the predators or attract each other for mating. This may expose them to extinction.
2. The receiver of the message would not be able to understand.
3. This indicates that the flowers are nearby.
4. This indicates that the flowers are far away.
5. The whole system stops working.

6. Nurse ants release a strong smell.

....

....

7. Solider ants release a strong smell.

....

....

8. Scout ants release a strong smell.

....

....

9. The echoed sound waves do not reach the bat during its flight.

....

....

10. If the blind cane did not convert the echo to vibration.

....

....

11. If the original habitat of an animal is destroyed.

....

....

Answers:

6. This indicates the lack of food, so the scout ants begin to search for food.
7. The scout ants receive this message and begin to alert ants to collect the food in the burrows.
8. This indicates that there is a danger nearby.
9. The bats will collide with a surface or barrier during its flight.
10. The blind person would not be able to locate the obstacles in front of him, and the cane becomes useless.
11. This animal disappears from the habitat and it will be displaced to find another habitat.

8 Compare between each of the following:

1. Fireflies - bees - ants, in terms of the communication method.
2. Sound waves emitted by humpback whales in both summer season and winter season.
3. Both single dance and repeated dances made by bees.
4. Bats and blind canes in terms of transmitted sound waves and echoed sound waves.

9 What is meant by...?

1. Normal frequency or pitched sound.
2. High frequency or high pitched sound.
3. Low frequency or low pitched sound.

Answers 8:

Answer by yourself.

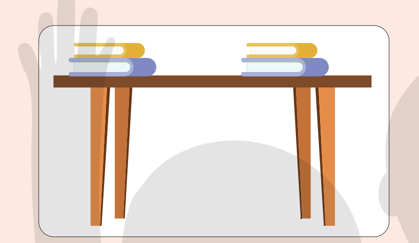
Answers 9:

1. Normal frequency: number of waves that passing through a given point in a specific time.
2. High frequency: a large number of waves passing through a given point in shorter time.
3. Low frequency: a small number of waves passing through a given point in longer time.

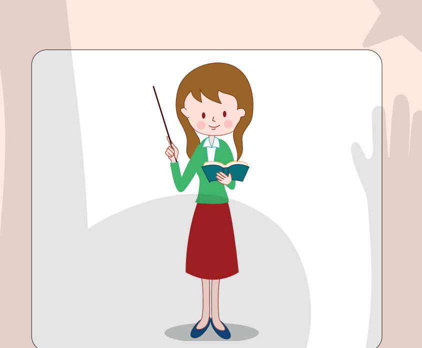
Concept 2-1
Motion and Stopping

Remember that:

When does the movement stop?



- Gravity **pulls** the book downwards.
- The table **pushes** the book upwards with a force **equal to** the force of gravity.



- Gravity **attracts** the girl downwards.
- The ground **pushes** the girl upwards with a force **equal to** the force of gravity.

* Two **equal** forces in magnitude, but **opposite** in direction.
* Upward force or pushing force.
* Downward force or gravity force.
* The book does not move; the **two** exerting forces are **balanced**.
* The girl does not move; the **two** exerting forces are **balanced**.

As a result:

Moving bodies stop when there are **two forces** equal in **magnitude**, but opposite in **direction**.

Q 1: How does the car stop moving?

Answer: When the car driver applies the **brakes force**.

Condition:

The brakes force must be equal to the car engine force in **magnitude**, but opposite in **direction**.

Q 2: When does the car stop moving?

a) When the car runs out of **fuel**.

b) When the driver applies the **brakes**.

Remember that:

Conditions:

The presence of friction forces:

a) between the **wheels** of the car and the **ground**.

b) between the **surface** of the car and the **air**.

* The **two acting forces** are equal in **magnitude**, but opposite in the **direction** of its motion.

* Appyling brakes **slows down** the car i.e. **decreases** the car **speed** gradually until the car comes to rest i.e. the car **stops**.

Friction:

A **force** created between the surfaces of two bodies **in contact**.

In both cases:

Q 3: What do you suppose when comparing the magnitudes of two forces?

Answer:

1. The **pushing force** acting on the moving car = The **sum** of the two forces of **friction**.
2. Car engine **power** = The **friction force** acting on the car.

Q 4: What is a "Pull Force"?

Answer:

The pull force is defined as a **force** that causes an **object** to **move** towards the person who is **pulling** the object.

Examples:

1. Opening a door.
2. Plucking the string of a guitar.
3. Drawing a bucket of water from a well.
4. Pulling the curtain.

Remember that:

Q 5: What is a "Push Force"?

Answer:

It is defined as a force that causes an object to move from its state of rest. When an object is pushed, it tends to move away.

Examples:

1. Kicking a ball.
2. Closing a door.
3. Pushing a trolley.
4. Inserting a plug into the socket.

* Car accelerator pedal:

The accelerator is also known as "gas pedal". This pedal controls the amount of the burned fuel and thereby controls the speed of the car.

* Car brakes:

A device for slowing or stopping the car by means of friction force.

Q 6: Which best describes a force?

Answer:

Forces can be described as pushing or pulling an object. This may occur due to phenomena, such as gravity, friction, or anything that might change the body speed.

Q 7: What is the scientific idea of work?

Answer:

Work is a measure of energy transfer that occurs when an object is moved over a distance by an external force.

* Seat belt:

A seat belt is a vehicle safety device designed to secure the driver or the passenger of a vehicle against any harmful movement that may result during a collision.

Remember that:

Motion:
Movement of an object from a **place** to **another**.
Examples:
1. Moving a car.
2. Moving a book on a table.

Thermal energy: random or **internal** kinetic energy.
* The greater the **thermal energy**, the greater the **kinetic energy**.

Gravitational Potential Energy:
is the energy an object possesses because of its **position**.
Examples:
1. A raised weight.
2. Water that is behind a dam.
3. A car that is parked at the top of a hill.
4. A yoyo before it is released.
5. River water at the top of a waterfall.
6. A book on a table before it falls.
7. A child at the top of a slide.
8. Ripe fruit before it falls.

Gravitational Force:
The force of **attraction** on a body by **Earth**.

Gravitational Energy:
The energy **stored** in an object due to its **height** above Earth (if it's **further** away or **closer** to the ground). It is a form of **potential energy**.
* An object's height **above** the **ground** gives it gravitational energy.

Q 8: What affects gravitational potential energy?
Gravitational potential energy is determined by three factors: **mass**, **gravity**, and **height**.

Kinetic energy: The energy that is possessed by an object due to its **motion**.
Potential energy: The energy that is possessed by an object due to its **position**.
* **The two types of mechanical energy:**
1. Kinetic Energy (energy of **motion**)
2. Potential Energy (stored energy of **position**).

Q 9: What source does energy come from?
Answer:
Energy supply comes mainly from the **fuel**.

1 Choose the correct answer from the given answers:

1. The force acting on the person carrying the gas cylinder is the force of ....
   a. air resistance b. gravity c. friction d. engine
2. What is the type of force used with the shopping cart? ....
   a. Gravity b. Wind c. Pulling d. Pushing
3. The ball resting on the ground is due to the force of ....
   a. friction b. air resistance c. movement d. gravity
4. The wind power becomes larger, when ....
   a. taking a long breath b. things around us move
   c. rain falls d. a heavy load is moved
5. The ball resting on the ground moves, when ....
   a. light falls on it b. gravity acts on it
   c. a big force acts on it d. it is touched
6. All the following are considered as a force, except ....
   a. gravity b. friction c. cloud d. electricity
7. A person needs .... to climb a slope.
   a. work b. energy c. force d. move
8. If you want a ball to reach a certain height, what should you do? ....
   a. I kick it gently b. I kick it hard
   c. I decrease its speed d. I change its direction
9. The two types of force are ....
   a. pull and push b. pull and attract
   c. light and strong d. visible and invisible

Answers 1:

1. b	2. d	3. d	4. b	5. c
6. c	7. c	8. b	9. a	

10. While you are pushing or pulling a car, you need ....

a. mass	b. weight	c. volume	d. energy

11. The motive force of the cart represented in the picture is a .... force.

a. gravity
b. wind
c. cloud
d. pushing

12. In the opposite figure, the forces of the two teams are ....

a. balanced
b. unbalanced
c. vanished
d. not related

13. The change in the position of an object over time is caused by ....

a. motion	b. energy	c. force	d. gravity

14. In the opposite figure, what made the ball move up and fly in the air?

a. Push force
b. Pull force
c. Balanced force
d. Unbalanced force

15. In the previous figure, what made the ball fall down?

a. Friction force	b. Gravity force
c. Electric force	d. Wind force

Answers:

10. d	11. d	12. b
13. a	14. a	15. b

16. What are the two things that must happen for the ball to be in motion state?
   a. There must be a force to start its movement and change its position
   b. There must be a force acting on the ball until it disappears
   c. Without any acting force, it changes its position
   d. Without any acting force, the ball does not disappear
17. An example of movement that can be seen easily is the ....
   a. leaves blown by the wind
   b. ball at rest
   c. chair we are sitting on
   d. television while watching the match
18. What are the forces acting on us when we are at rest?
   a. Friction force
   b. Pushing force of Earth on us
   c. Gravity force
   d. b and c together
19. An example of starting the movement by pulling is ....
   a. pulling a baby car from behind while it is in motion
   b. pulling a running football player from behind
   c. pulling an elevator downwards, while it is moving upwards
   d. pulling a static horse-drawn cart from the front
20. Examples of the pulling force include ....
   a. pulling a static horse-drawn cart from the front
   b. pulling a static baby stroller with a rope
   c. pulling a static horse-drawn cart from behind
   d. pulling a static market cart from the front

Answers:

16. a   17. a   18. d
19. d   20. c

2 Complete the following:

1. Objects in motion stop, when the two acting forces are .... in magnitude, but .... in direction.
2. The force between the surfaces of two bodies in contact is called the .... force.
3. The car stops moving, when acted upon by a/an .... brakes force to that applied by the car engine.
4. When the car runs out of fuel while it is in motion, it stops because of the .... force.
5. The forces of friction that hinder the movement of the car are between the .... and the .... as well as between the .... and the ....
6. The opposite figure shows the space rocket before launching, forces affecting the space rocket are the gravitational force and the pushing force of Earth on the rocket, and they are .... forces.
7. The opposite figure shows the space rocket after launching, forces affecting the space rocket are the gravitational force and the pushing force of Earth on the rocket, and they are .... forces.
8. When an object is pushed with a large force, it will move a .... distance. When the same object is pushed with a small force, it will move a .... distance .
9. The greater the force acting on the body, the .... the distance it moves.

Answers 2:

1. equal, opposite
2. friction
3. equal
4. friction
5. car wheels, ground - surface of the car, air
6. balanced
7. unbalanced
8. longer, shorter
9. larger

10. For a static body to start moving from rest, there must be a .... force and for a moving body to stop moving, there must be a .... force.
11. There must be a/an .... to use force on a body.
12. Forces cause the transfer of .... from a body to another.
13. The amount of energy required to move an object by the force acting on it is called ....
14. The body changes its state from rest or motion if the acting forces are ....
15. The body does not change its state from rest or motion if the acting forces are ....
16. If the body moves in a straight line with the same speed, then the forces acting on it are .... forces.
17. The moving body will stop its movement if the acting forces upon it are ....
18. Forces act on objects to make the moving body ...., the body at rest to ...., the body moving in a certain direction to ...., and the body moving with a certain speed either to .... or .... its speed.
19. The car driver can stop his car by using the .... because of the .... force.
20. The car driver can increase the speed of the car by using the .... and the reason is to increase the consumption of .... which burns and turns into energy.

Answers:

10. pulling, pushing
11. energy
12. energy
13. work
14. unbalanced
15. balanced
16. balanced
17. unbalanced
18. stop, start moving, change its direction, increase, decrease
19. brakes, friction
20. car accelerator, fuel

3 Write the scientific term:

1. A force that attracts bodies towards the center of the Earth. (..............................)
2. Energy is neither created nor destroyed, but transformed from one form to another. (..............................)
3. Moving an object from one place to another (or changing the position of the body). (..............................)
4. A force acting on a body to move it a certain distance. (..............................)
5. The energy that is converted into heat or motion. (..............................)
6. The energy that turns into heat. (..............................)
7. The ability to do work or make a change, or the ability to move an object over a certain distance. (..............................)
8. The energy stored in a body. It depends on its length and mass. (..............................)
9. The energy that the body possesses as a result of its motion. (..............................)
10. The pull or push acting on a body. (..............................)

Answers 3:

1. Gravity
2. Law of Energy Conservation
3. Work
4. Motion
5. Thermal energy
6. Thermal energy
7. Energy
8. Gravitational potential energy
9. Kinetic energy
10. Force

11. A natural or artificial body revolving around another body in space.

(..)

12. The source from which a certain form of energy comes.

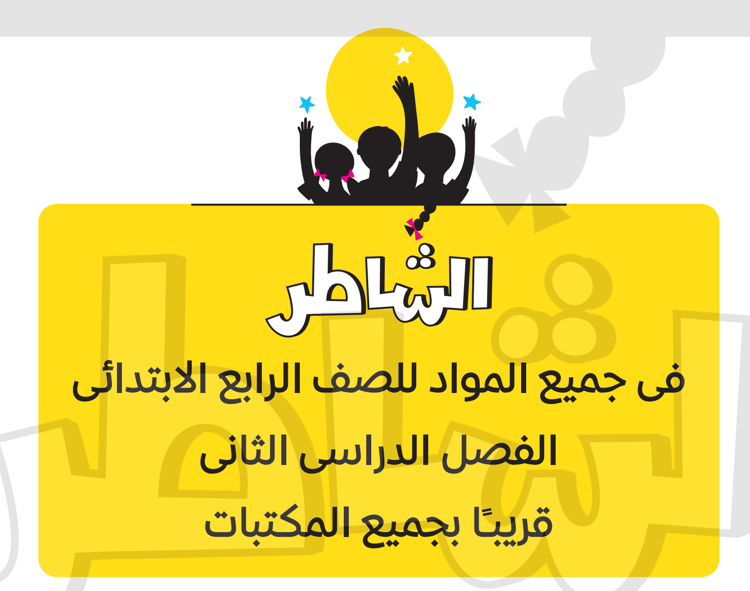
(..)

13. A property by which materials do not allow energy to transfer through them.

(..)

14. A substance used to generate energy. (..)

15. A force created between the surfaces of two bodies in contact. It hinders motion. (..)



Answers:

11. Satellite
12. Fuel
13. Resistance
14. Fuel
15. Friction

4 Put a (✓) or a (✗) for the following statements:

1. Friction works in the same direction of the moving body. ( )
2. The moving body continues to move unless acted upon by a force that can change its state of motion. ( )
3. Pulling force makes the body move away from the force. ( )
4. The force exerted by a horse on a vegetable cart is pulling force. ( )
5. The static body does not move if a balanced force acts on it. ( )
6. A force may lead to the movement of a static body. ( )
7. Work is the amount of energy that provides the force needed to move a body. ( )
8. The greater the force acting on an object, the smaller the distance it will move. ( )
9. When a car hits a wall, the car stops. ( )
10. Friction force always increases the speed of the moving body. ( )
11. If a force is acting on a moving body in the direction of the moving body, the body will stop. ( )
12. One of the two teams will win in the tug of war game if the acting forces are unbalanced. ( )
13. A ball that is thrown up in the air stops, due to the force of friction only. ( )
14. The movement of the football player can be seen, while the movement of Earth around the sun cannot be seen. ( )

Answers 4:

1. ✗	2. ✓	3. ✗	4. ✓
5. ✓	6. ✓	7. ✓	8. ✗
9. ✓	10. ✗	11. ✗	12. ✓
13. ✗	14. ✓		

15. Gravity pulls the ball downwards. ( )
16. When the car runs out of fuel, it stops due to the friction force. ( )
17. Force does not transfer energy from one body to another. ( )
18. Work is energy that is not required to move the body. ( )
19. The balanced forces acting on a body change its state. ( )
20. The static body may move if unbalanced forces act on it. ( )

5 Correct the underlined words in the following statements:

1. The body will remain at rest unless a/an energy acts upon it to change its state.
2. The state of the static body changes if an unbalanced force acts on it.
3. Work transfers energy from one body to another.
4. Force is the energy that moves an object towards a certain distance in the same direction of the acting force.
5. Work is an external stimulus that may change the state of body if it is static or moving.
6. When a body is in motion, this means that it is affected by a balanced force.
7. If the force acting on a moving body is in the opposite direction of the moving body, then the speed of the moving body does not change.

Answers 4:

15. ✓ 16. ✓ 17. ✗
18. ✗ 19. ✗ 20. ✓

Answers 5:

1. force 2. does not change 3. Force
4. Work 5. Force 6. an unbalanced
7. decreases

8. For a rocket to reach space, the forces acting on it should be balanced.
9. An object is pushed with a force and it covers a distance of 10 meters. If half of this force acts on the object, it will move for a distance of 20 meters.
10. The satellite continues to rotate for hundreds of years at the same speed because the forces acting on it are balanced forces.
11. The car stops when it hits a wall because of the force of friction.
12. Gravity is a force created by the surface contact between two bodies.
13. Pulling a static car with a rope using another moving car is an example of the acting work.
14. The forces shown in the figure by which each person exerts on the other is non-existent.
15. Rotation of your desk around Earth can be observed.



Answers:

8. unbalanced	9. 5	
10. vanished	11. the wall itself	12. Friction
13. force	14. balanced	15. cannot be

6 Write the scientific reasons for each of the following:

1. The rotation of Earth around the sun cannot be observed.

....

....

2. The aircraft moves faster than the truck.

....

....

3. Truck moving after refueling.

....

....

4. The moving car stops when its engine is turned off.

....

....

5. One team wins a tug-of-war game.

....

....

Answers 6:

1. Because all objects on the Earth's surface rotate around the Earth's center with the same speed.
2. Because:
   a. The power of the aircraft engine is much stronger than that of the truck engine.
   b. The friction force is less in case of the aircraft.
3. Due to the high consumption of the fuel. This leads to the generation of high heat.
4. Because of the friction force.
5. Because of the existence of unbalanced forces acting on both teams.

7 What happens in the following cases...?

1. You do not wear your seat belt while riding in the car.

....

....

2. Two cars collide.

....

....

3. The speed of the car is high during the collision.

....

....

4. An external force acts on a body.

....

....

5. A truck is equipped with three jet engines.

....

....

Answers 7:

1. A harmful movement may result during a collision.
2. This leads to:
   a. Car damage.
   b. Sound of car crash.
   c. Cuts and burns.
3. Car distortion occurs:
   a. A fire may take place.
   b. Skin damage.
   c. Fractures.
   d. Loss of limbs.
   e. Injuries.
   f. Brain injuries
   g. Internal organ damage.
4. It may change its state whether in motion or at rest.
5. The speed of the truck increases.

6. Two cars move in the same direction at the same speed.

....

....

7. A car driver applies the brakes.

....

....

8. The satellite is launched to space and the forces affecting it become non-existent.

....

....

9. The value of the acting force acting on a moving car by the car pedal is reduced to its half.

....

....

10. A group of balanced forces acts on an object.

....

....

Answers:

6. Both of them seem as if they are static relative to the passengers of both cars.
7. The car will come to rest after a certain period of time.
8. The satellite will continue rotating in its orbit around Earth for hundreds of years with the same speed.
9. The distance covered by the car will be reduced to the half of its value.
10. The state of the object does not change in both cases of rest or motion.

8 Compare between:

1. Balanced force and unbalanced force.

Balanced Force	Unbalanced Force

2. A big force acting on a car and a small force acting on a similar car.

The Big Force	The Small Force

3. Force and work.

Force	Work

Answers 8:

1.

Balanced Force	Unbalanced Force
It does not change the state of the body.	It changes the state of the body.

2.

The Big Force	The Small Force
It lets the car cut a longer distance.	It lets the car cut a shorter distance.

3.

Force	Work
A push or pull on an object that causes it to change its position.	Energy transferred by a force from an object to another.

4. The motion of a static body begins with a pulling force, and a motion is stopped by using an equal pulling force.

Motion of Static Body	Stop of Motion

5. The start of motion of a static body with a pushing force and the stopping of motion by using an equal pushing force.

Motion of Static Body	Stop of Motion

6. A type of motion that can be observed and another type of motion that cannot be observed.

The motion that can be observed	The motion that cannot be observed

Answers:

In the case of Pulling Force:

4.

Motion of Static Body	Stop of Motion
* A front force acts on the body. * Motion will be in the force direction.	* A back force acts on the body. * Motion will be in the opposite direction.

In the case of Pushing Force:

5.

Motion of Static Body	Stop of Motion
* A back force acts on the body. * Motion will be in the opposite direction.	* A front force acts on the body. * Motion will be in the force direction.

6.

The motion that can be observed	The motion that cannot be observed
* Motion of a car. * Relative motion.	* Motion of a satellite. * Both bodies move in the same direction with the same speed.

9 What is meant by...?

1. Gravitational force.
2. Law of Energy Conservation.
3. Motion.
4. Chemical energy.
5. Thermal energy.
6. Energy.
7. Gravitational potential energy.
8. Kinetic energy.
9. Force.
10. Satellite.
11. Energy source.
12. Resistance.
13. Fuel.
14. Friction.



Answers 9:
Answer by yourself.

Concept 2-2
Energy and Motion

Remember that:

* There are many forms of energy.
* In order for a body to move, the body must acquire kinetic energy.
* **Law of Conservation of Energy:**
* Energy is neither created nor destroyed, but it can change from one form to another
* As the skater begins the descent down the hill, potential energy is lost and kinetic energy (i.e. energy of motion) is gained.

Q 1: At what position is the skater not moving at all?

Answer:

* At the top of the ramp, before he starts moving downwards, the skateboarder has zero kinetic energy.

Q 2: At what position is the potential energy of the skater the highest?

Answer: At the slope.

Q 3: What is gravitational potential energy (GCSE)?

Answer:

* The energy an object possesses because of its position in a gravitational field.
* The energy stored in an object as the result of its vertical position or height.

Q 4: What are the two main types of potential energy?

Answer:

1. Gravitational potential energy.
2. Elastic potential energy.

Q 5: What type of energy does an ice skater possess?

Answer:

* The moving ice skater have kinetic energy, the energy of motion which is then transformed to thermal energy due to friction.
* The skater must do work in order to bring his arms in towards his body.

Remember that:

Q 6: What type of force causes an ice skater to move?

Answer: Friction.

Q 7: What is the change in energy forms, when a roller coaster goes upside down?

Answer:

Its motion is **constantly** shifting between **potential** and **kinetic** energy.

Q 8: What kind of energy does the roller coaster gain as it goes up?

Answer:

Kinetic energy.

Q 9: What force is at work during the running of the roller coaster?

Answer:

1. Friction.
2. Air resistance.
3. Gravitational potential force.

Q 10: What type of energy does the height of a roller coaster give to the cart?

Answer:

Potential energy.

Q 11: How does a roller coaster use mechanical energy?

Answer:

When the roller coaster is raised up to the **highest point**, **mechanical energy conversion** occurs.

The change in energy by the rubber band in children toys:

* As the rubber band **unwinds**, the stored **potential** energy changes into **kinetic** energy.
* The **more** potential energy that gets turned into kinetic energy, the **further** and **faster** your toy will go.

1 Choose the correct answer from the given answers:

1. In the figure shown in front of you, ...
   a. the ball has no energy
   b. the ball moves downwards
   c. the ball has energy
   d. the ball moves up
2. All the following have kinetic energy, except ....
   a. planks of wood on the ground
   b. a runner running in a race
   c. a moving car
   d. a boy riding a bike
3. The strength of the wind can be observed by looking at ....
   a. a static body
   b. moving water in the sea
   c. number of things moving
   d. a moving train
4. All of the following have potential energy, except a ....
   a. car on top of a bridge
   b. person standing on the ground
   c. coil spring stretched
   d. rubber band stretched
5. Energy stored in food is .... energy.
   a. chemical
   b. thermal
   c. sound
   d. light
6. The light bulb produces .... energy.
   a. light
   b. thermal
   c. sound
   d. light and thermal
7. A car battery has potential energy in the form of .... energy.
   a. visible
   b. chemical
   c. light
   d. sound
8. What happens to the energy stored inside the human body? ....
   a. It gradually vanishes
   b. It gradually increases
   c. It transforms into another form
   d. It doesn't change

Answers 1:

1. c	2. a	3. c	4. b
5. a	6. d	7. b	8. c

9. The ball that falls from the top to the bottom has the greatest potential energy at ....
   a. the highest point b. the lowest point
   c. the mid-distance d. none of the above
10. A free body will ...., when acted upon by gravity.
   a. move upwards b. move downwards
   c. be at rest
   d. fall downwards with a constant speed
11. When the handle of a sharpener is rotated, ... energy is produced.
   a. potential b. kinetic c. sound d. light
12. Energy can be described by all of the following, except that ....
   a. it can be seen b. it can be stored
   c. it can be converted into another form
   d. it can be felt
13. Kicking the soccer ball with a certain force leads to all the following, except ....
   a. the movement of the ball
   b. changing the direction of the ball
   c. changing the size of the ball
   d. increasing the speed of the ball
14. Energy is important to us because ....
   a. it is not an essential part of anything that happens in the world
   b. it is not everything we do
   c. if it was not on our planet, everything would have stopped
   d. it does not change from one form to another

Answers:

9. a	10. b	11. b
12. a	13. c	14. c

15. .... is the ability to do work.

a. Force　　b. Energy

c. Work　　d. Movement

16. .... is/are the amount of force that causes the body to move.

a. Energy　　b. Work

c. Movement　　d. Pull and push forces together

17. The energy stored inside the body is .... energy.

a. potential　　b. kinetic

c. sound　　d. light

18. The energy that leads to the movement of the body is .... energy.

a. potential　　b. kinetic

c. sound　　d. light

19. When a book falls from the top to the bottom, the potential energy of the book ....

a. increases　　b. decreases

c. remains stable　　d. none of the above

20. When the ball goes up, the kinetic energy of the ball ....

a. increases　　b. decreases

c. remains stable　　d. none of the above

Answers:

15. b　　16. b　　17. a

18. b　　19. b　　20. b

2 Complete the following:

1. The .... energy of the body reaches its maximum before it touches the surface of the earth during its fall.
2. The potential energy of a body increases as its height above the earth's surface ....
3. The .... concept means that the body is ready to do work.
4. The .... energy is gained by the body due to its motion.
5. The .... energy includes the forms of chemical and gravitational energies.
6. The .... energy includes the forms of light, thermal, electric and sound energies.
7. The .... energy is the stored energy inside the body and it can change to other forms of energy.
8. The energy possessed by a body due to its motion is .... energy.
9. The light bulb converts the stored chemical energy to both .... and .... energies.
10. The stored chemical energy changes into kinetic energy as in the car ....

Answers 2:

1. kinetic
2. increases
3. energy
4. kinetic
5. potential
6. kinetic
7. potential
8. kinetic
9. light, thermal
10. engine

11. When heating and operating the gas oven, the potential chemical energy is converted into .... energy.

12. The energy stored in the rubber band and springs inside children's toys is .... energy.

13. The car fuel may be natural gas, electricity or ....

14. The energy is neither created nor ...., but it can .... from one form to another.

15. The chemical energy stored inside a battery changes to .... energy that is transformed by the robot's hand into .... energy that in turn opens the bottle cap.

16. When the roller coaster descends from top to bottom, its speed increases due to ....

17. Any body obtains kinetic energy during the .... of other forms of energy.

18. At the top of the ramp, the roller coaster stores the .... amount of the stored energy and when it slides, the .... vanishes.

19. Battery-powered fan converts chemical energy into .... energy.

Answers:

11. thermal
12. potential
13. gasoline
14. destroyed, change
15. electric, kinetic
16. gravity
17. change
18. maximum, potential energy
19. kinetic

3 Write the scientific term:

1. A type of force that acts on bodies on Earth, so that they move, change their locations or come to rest. (..............................)
2. The ability to do work. (..............................)
3. It can be stored, it cannot be seen and it can be changed from one form to another. (..............................)
4. A form of energy that is stored inside bodies. (..............................)
5. A form of energy that leads to body movement. (..............................)
6. A form of energy possessed by a ball, when it is raised upwards. (..............................)
7. The main form of energy that includes other forms of energy, such as chemical and gravitational energies. (..............................)
8. The main form of energy that includes other forms of energy, such as light, electric, thermal and sound energies. (..............................)

Answers 3:

1. Energy
2. Energy
3. Energy
4. Potential energy
5. Kinetic energy
6. Potential energy
7. Potential energy
8. Kinetic energy

9. A place inside the car in which the stored chemical energy changes to both kinetic and thermal energies. (..............................)

10. Energy is neither created nor destroyed, but can change from one form to another. (..............................)

11. A source of energy for cars that results from the decaying of plants and animals buried deep inside earth millions of years ago. (..............................)

12. A form of energy that results from the stored chemical energy inside the car. (..............................)

13. A game in which kinetic energy sometimes changes into potential energy and vice versa. (..............................)

14. A type of winter sports in which potential energy is converted into kinetic energy and vice versa. (..............................)

15. A form of energy possessed by a ball at its maximum height. (..............................)

16. A form of energy that leads to the objects falling down to reach the earth's surface. (..............................)

Answers:

9. Engine
10. Law of Energy Conservation
11. Gasoline
12. Kinetic energy
13. Roller coaster
14. Ice skating
15. Potential energy
16. Gravitational potential energy

4 Put a (✓) or a (✗) for the following statements:

1. The moving ice skater have kinetic energy. ( )
2. When the fan is running, the electrical energy is converted into potential energy. ( )
3. On the roller coaster, during the ascent, its motors run on electricity to make it reach its maximum height. ( )
4. The robot's hand converts electrical energy into kinetic energy. ( )
5. The energy is created, but it can be destroyed and can change from one form to another. ( )
6. Plants and animals decompose in ancient times and turn into oil or petroleum. ( )
7. Gasoline is one of the petroleum products, which is stored as thermal energy. ( )
8. The car engine converts the chemical energy stored in it into kinetic energy. ( )
9. The chemical potential energy contained in food is converted into kinetic energy that helps the person to move and to carry out his various activities. ( )
10. The car engine is a place where kinetic energy is converted into potential energy. ( )

Answers 4:

1. ✓ 2. ✗ 3. ✓ 4. ✓
5. ✗ 6. ✓ 7. ✗ 8. ✓
9. ✓ 10. ✗

11. The chemical potential energy stored in natural gas is converted into thermal energy and kinetic energy, when the car starts moving. ( )

12. When the rubber band is released in the children's toy, kinetic energy is produced. ( )

13. Potential energy is the energy stored in more than one form of energy. ( )

14. The energy that a body possesses due to its motion is chemical energy. ( )

15. During the fall of a raw egg, the gravitational potential energy increases its speed. ( )

16. The potential energy of a child sitting on a slide is converted into kinetic energy when he slides on it. ( )

17. The kinetic energy is a stored energy. ( )

18. Sound energy is a form of stored energy. ( )

19. Water at the top of a waterfall has potential energy. ( )

20. The kinetic energy of a body that is thrown upwards is lost at the moment of throwing. ( )

Answers:

11. ✓	12. ✓	13. ✓
14. ✗	15. ✓	16. ✓
17. ✗	18. ✗	19. ✓
20. ✗		

5 Correct the underlined words in the following statements:

1. The kinetic energy of a body falling down reaches its maximum when it reaches the maximum height.
2. The energy stored in any body is kinetic energy.
3. The ability to do work is force.
4. In the opposite figure, the ball has kinetic energy due to its height.



5. When a body falls from top to bottom, potential energy is converted into chemical energy.
6. When the roller coaster is pushed down the inclined surface, the potential energy increases.
7. The mechanical potential energy stored in natural gas is converted into thermal energy.

Answers 5:

1. immediately before touching the earth's surface
2. potential
3. energy
4. potential
5. kinetic
6. kinetic
7. chemical

6 Write the scientific reasons for each of the following:

1. A change in the speed or direction of a ball.

....

....

2. The sound, electrical and thermal energies are called kinetic energy.

....

....

3. Chemical energy, elastic potential energy, gravitational energy, and mechanical energy are called potential energy.

....

....

4. After the roller coaster reaches its maximum height, it moves downwards.

....

....

5. The electric lamp lights up while it is being supplied with electric power.

....

....

6. People generally eat food.

....

....

7. Basketball in the air has potential energy.

....

....

Answers 6:

1. Because an external force acts on it.
2. Because all of them has the ability to transfer.
3. Because all of them has the ability to do work.
4. Because of the gravitational potential force.
5. Because electric energy changes into light energy.
6. To change the energy needed to grow and move.
7. Due to its height.

7 What happens in the following cases...?

1. You let a ball fall from a height.

....

....

2. The roller coaster moves from bottom to top.

....

....

3. Pulling the roller coaster on an upward sloping surface.

....

....

4. Plants and animals decompose deep under the earth's surface.

....

....

5. You burn some gasoline.

....

....

Answers 7:

1. Potential energy changes into kinetic energy.
2. Kinetic energy changes into potential energy.
3. Potential energy increases till it reaches its maximum.
4. Petroleum is formed.
5. Chemical energy changes into thermal energy.

8 Compare between:

1. Potential energy and kinetic energy.

Potential Energy	Kinetic Energy

2. Movement of the roller coaster from bottom to top and its movement from top to bottom.

Movement of the roller coaster from bottom to top	Movement of the roller coaster from top to bottom

3. A roller coaster and a battery-powered electric fan.

Roller Coaster	Battery-powered Electric Fan

Answers 8:

1.

Potential Energy	Kinetic Energy
It depends on height and gravity.	It depends on speed.

2.

Movement of the roller coaster from bottom to top	Movement of the roller coaster from top to bottom
Kinetic energy increases. Potential energy decreases.	Kinetic energy decreases. Potential energy increases.

3.

Roller Coaster	Battery-powered Electric Fan
It changes potential energy into kinetic energy and vice versa.	It changes electric energy into kinetic energy.

9 What is meant by...?

1. Work.
2. Energy.
3. Kinetic energy.
4. Potential energy.
5. The Law of Conservation of Energy.
6. The engine.
7. Electric power.
8. Gasoline.
9. Snow skating.
10. The roller coaster.



Answers 9:

Answer by yourself.



Worksheet (1)

1- Classify the following animals according to the environment where they live.

Camel	Fennec Fox	Polar Bear	Octopus
Desert Lizard	Bull Shark	Arctic Fox	Penguin

Cold Polar Regions	Hot Deserts	Oceans

2- The characteristic by which living organisms can survive in the environment is called ______________________.

3- ______________________ is an example of adaptation by which animals hide from their predators or prays by blending in with the surrounding environment.

4- How do Fennec Foxes adapt to living in the desert? (Write 2 things)

1. ____

2. ____



5-Give Reason

a) Palm trees are covered with a waxy layer.

____

b) Penguins have a thick layer of fat.

____

c) Penguins feet don't freeze.

____

6-Complete this table

Animal	Habitat	Adaptation to survival
Penguin	Antarctica	Its body is covered with a thick layer of fat and thick feathers.
Polar bear	Arctic	1 It has thick fur to protect it from the cold 2 ....
Brown bear and dark bear	....	It has dark fur that provides camouflage to help it hide among the trees as it hunts so it cannot be seen by its prey.
Caracal and fennec fox	Deserts	1- It has sandy-coloured fur. 2 .... 3 ....
Lizards	Some lizards live in the desert and some live in other ecosystems among rocks or in gardens.	....



7- Choose:

1-Adaptation helps living organisms in all the following characters except…

(a) Surviving (b) hiding (c) death

2- If a desert lizard is transferred into a cool environment, it will stop………

(a) Looking for water to drink (b) breathing

(c) Looking for shade area (d) eating

3- When chameleon touches a blue flower, it blend with this color which atype of ……………..

(a) Sleeping (b) breathing (c) camouflage

4- The behavioral adaptation that helps the animals protect itself from enemies……………..

(a) Blend in (b) extinction (c) immigration

5- ………………. are panting to lower its body temperature.

(a)Whales (b) lions (c) foxes

6- Animals that live in a hot environment have ……………ears to cool their bodies.

(a) small (b) short (c) long.

8-What happens when……?

One of the organs of the digestive system of human is absent.

………………………………………………………………………

9- Some dogs live in a cold environment, while others live in a hot environment, in your opinion, which one has a thick fur? And why?



Worksheet (2)

Questions: A) Complete this table.

Animal	Structural adaptation	Behavioral adaptation
Fennec Fox **Habitat**	It has... ....fur. 2-it has..to help it cool down.	1-It pants like dogs. 2-... ....
Arctic Fox **Habitat**	1- It has thick fur. 2- .... 3-..	1-... .... 2-.. ....
Bull Shark **Habitat:** .... &	1-... .... 2- .... 3-..	1- .... 2-.. ....
Chameleon	1-It has .... to help it blend in the environment. 2-It has ....to hunts insects. 3- It has ....to hold tightly in branches of trees.	1- It puffs up its body with air. 2- .... 3- ....

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Worksheet (3)

1 Classify the following living organisms according to their habitat into organisms that live in deserts and organisms that live in forest in the table below:

(Starred agama lizard - Panther Chameleon - Fennec Fox - Kapok Tree - Palm tree- Barbary fig plant)

Acacia tree	Kapok tree
....	....
....	....
....	....

2 Compare between:

Points of comparison	Acacia tree	Kapok tree
1-Type of roots:	....	....
2-Shape of leaves:	....	....

Points of comparison	Acacia tree	Pine tree	Water lily
1-Habitat:	....	....	....
2-Shape of leaves:	....	....	....



2-Choose:

1. **The roots of palm trees help them to ……….**
   (a) Stand strong against the wind (b) reach underground water
   (c) Fix the tree in the soil (d) all are correct

2. **The cactus plant has spines that protect it from being eaten by desert animals, and this is considered a form of ……………**
   (a) Behavioral adaptation (b) structural adaptation

3. **Mangroves tree grow in………………**
   (a) Fresh water (b) salt water

4. **Barbary fig keeps animals away like acacia trees by its ………..**
   (a) Smell (b) sharp spines (c) poison

5. **Umbrella-shaped tree are ………..**
   (a) Mangrove tree and acacia tree (b) Mangrove tree and kapok tree
   (c) Acacia tree and kapok tree.

6. **Acacia tree trunk and camel hump……….**
   (a) Both store water (b) both store fat
   (c) The first stores water. The second stores fat.

3- What happens of ……?

A plant is taken from its original environment and placed in another different environment.

……………………………………………………………………………..



Worksheet (4)

Questions on the digestive system:

A) Write the correct scientific term.

Teeth	Esophagus	Stomach	Saliva	Small intestine	Tongue	Large intestine

1. It mixes food with acid and digestive juices. ______________________
2. It changes starch into sugar. ______________________
3. It absorbs water from the undigested materials. ______________________
4. It completes the digestion of different types of food. ______________________
5. They break down and crush food during chewing. ______________________
6. It mixes food with saliva. ______________________
7. It moves the food down into the stomach. ______________________

B) Complete:

1. Dogs have _____________ teeth that is suitable for eating meat, while cows have _____________ that is suitable for eating grass.

2. Cows have _____________ stomachs while dogs have one _____________.

C) Choose from column (B) what suits in column (A)

A	B
Esophagus	a. absorbs water from the undigested food to make solid waste.
Small intestine	b. mixes food with acid and digestive juices.
Large intestine	c. the digestion begins in.
Stomach	d. food gets completely digested.
Mouth	e. is a muscular tube that moves food down to the stomach

1 .... 2 .... 3 .... 4 .... 5 ....



Worksheet (5)

Questions

1. Compare between:

Points of comparison	Inhalation	Exhalation
1.Diaphram movement:	....	....
2.Size of chest cavity:	....	....
3.The air is rich in:	.... gas	.... gas

3. Match:

(A)	(B)
1. Trachea	a. is a large muscle at the base of the ribs that help process of exhaling and inhaling.
2. Blood	b. are like balloons and they fill up with air.
3. Diaphragm	c. carries the oxygen to all body organs.
4. Lungs	d. is a tube that air travels down into the lungs through.
	e. air enters the body through them.

1 .... 2 .... 3 .... 4 ....



Put (√) in front of the name of the system to which each of the following organs belongs:

The organ	The system	
	Digestive	Respiratory
1- Trachea		
2- Anus		
3- Stomach		
4- Lungs		
5- Small intestine		
6- Esophagus		
7- Diaphragm		
8- Nose		
9- Large intestine		
10- Liver		
11- Pancreas		

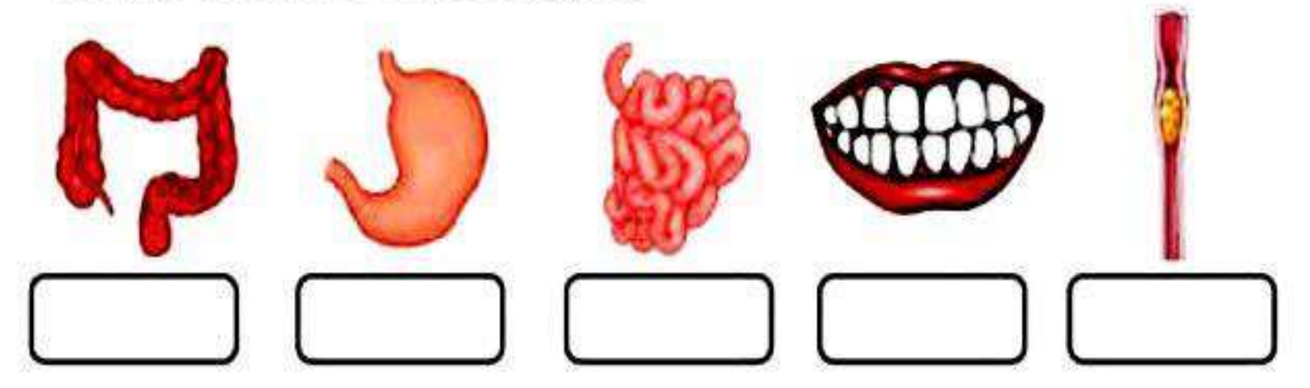
Write the scientific term of each of the following:

1. The organ where saliva moistens the food. [.......................................]
2. Liquid substance in your mouth that moistens the bite of food and begins to break it down. [.......................................]
3. A process through which the body gets oxygen from the air and expels out carbon dioxide. [.......................................]
4. The organ which receives the food from esophagus. [.......................................]



1. Label the organs of the digestive system. Choose the correct option.

2. Write the names of these organs.





3- Label the organ of the respiratory system:

1
2
3
4



Worksheet (6)

1- Correct the underlined words:

1-Fish use gills to take carbon dioxide gas out of the water.
(…………………….)

2- Fins in fish are found under bony flaps that open and close.

(…………………….)

3- Air enters the mouth of a fish and then passed across the gills.

(…………………….)

4-Gills are unique behavioral adaptation that allow fish to breathe under water.

(…………………….)

2-Write the scientific term of each of the following:

1- A natural change that causes burn of forests trees and grasslands.

(……………………..)

2- One of the natural changes, which cause severe damage to the agricultural fields. (……………………..)

3- What happens if……?

1-Pollution level increases in the natural habitat of amphibians.

………………………………………………………………………………………………

2-The ecosystem of amphibians is containing clean air and water.

………………………………………………………………………………………………

3-Amphibians have gills only to breathe.

………………………………………………………………………………………………



Worksheet (7)

1-Match column (B) to column (A)

A- It depends on the body's sense of heat for predation.	1.Light
B- it depends on the echo of the sound in locating the prey.	2.Owl
C- An animal with a bowl like face and strong senses of hearing and vision.	3.The snake
D- It is the visible form of energy that is transmitted in the form of waves.	4.The bat
E- A structural adaptation in the eye that provides some animals with better vision at night.	5.Hearing
F- A sense that helps us hear birds.	6. mirror like membrane

A. ……. B…….. C…….. D……. E………. F……….

2-Write the scientific term of each of the following

1-The time taken by an organism's body to react to different stimuli around it. (……………………)

2- The form in which the information messages transmit through nerves form the sensory organs to the brain. (………..………….)

3- Special type of nerves found in sensory organs and responsible for sending messages to the brain. (………..………….)



3- Complete the following sentences:

1- The …………is the organ that sends information to the brain when you smell the scent of a nice perfume.

2- The response of the eye nerves is ………….. than that of the ear nerves.

3- Hopping of the Egyptian jerboa in zigzag patterns to stay away from the snakes attacking it, is considered as a…………adaptation.

4- Owl can detect the places of their preys by using the super senses of ……………….. and………………

4- Put (√) or (X):

1- A dolphin produces sound waves through its ears so it can locate its prey. (   )

2- It is difficult for a dolphin to be a prey of the owl. (   )

3- The owl uses the sense of touch to hunt its prey at night. (   )

4- A dog uses its sense of smell and eyesight to identify its owner. (   )

5- Nerves are an important part of the digestive system. (   )



Worksheet (8)

A) Choose the correct answer:

1. Which of the following organs are working together for seeing different objects?

a) Nose and brain **b) Eyes and brain** **c) Tongue and brain**

2. All the following things are considered as a light source, except..........

a) eyes **b) fire** **c) the sun**

3. Animals that have a strong vision to hunt at night, include..........

a) owl and snake. **b) owl and bat.** **c) owl and cat.**

4. The thing that makes the eyes of fishing cats glow at night, is ....

a) the main controlling center of its body.

b) the light that bounces off membrane on the back of their eyes.

5. The sun and the moon appear bright, because ....

a) the light is bounced off both of them **b) the light bounced off the moon and is emitted from sun**

6. Humans have .... eyes than nocturnal animals.

a) smaller **b) bigger** **c) stronger**

7. The light wave travel in air as ....

a) curved line **b) straight line** **c) circular line**

8. The reflection light rays from an object enter the eye through ....

a) eye socked **b) tapetum lucidum** **c) eye pupil**

9. There is a .... inside your eye, that redirects the entered light rays.

a) black paper **b) white paper** **c) lens**



D) Write the scientific term of each the following:

1. The organ that is affected by light and responsible for sight. [..................................]

2. A species of wild cats, that have eyes glow at night. [..................................]

3. The organ that is responsible for processing information received from eyes, to know and recognize the surroundings. [..................................]

4. A body that appears lighted in the sky at night, but it is not considered as a source of light.
. [..................................]

5. Objects, that emit their own light. [..................................]

6. The visible form of energy, that bounce off objects into our eyes. [..................................]

7. The organ of vision, which receives light that reflected from the surrounding object.
[..................................]

8.The life-saving structural adaptation that gives fishing cat excellent night vision.
[..................................]

9. Animals that can see at night. [..................................]

D) Look at the following figures, then answer the questions below:

A B

1. Complete:

a. The surface in fig. (A) is ....

- Because ....

b. The surface in fig. (B) is ....

- Because ....

c. In two figures the falling and reflected rays show that light travels in .... Line.



B) Choose from (B) what suits it in (A):

(A)	(B)
1. Brain	a. through which sensory receptors of the eyes send message to the brain.
2. Pupil	b. through which the light rays are reflected, so eyes of nocturnal animals are glowing at night.
3. Tapetum lucidum	c. through which the light wave enters the eyes.
4. Nerves	d. through which the collected information from eyes are processed.

1. .... 2. .... 3. .... 4. ....

C) Choose from (B) what suits it in (A):

(A)	(B)
1. Fishing cat	a. has poor night vision, so it depends on feeling the heat of prey's body.
2. Owl	b. has excellent night vision and its eyes glow at night.
3. Bat	c. has poor night vision, so it depends on the sound that bounces off prey's body.
4. Snake	d. has extraordinary sight at night and bowl-shaped face.

1. .... 2. .... 3. .... 4. ....



Worksheet (9)

A) Choose the correct answer:

1. A firefly is not a bird, but it is a type of ....

a) amphibians b) beetles c) reptiles

2. All of the following ways can be used to communication between people except ....

a) speaking b) reading c) flying

3. Ancient .... created hieroglyphs in central America that included 800 different signs.

a) Egyptians b) Chinese c) Mayans

4. Reading and writing are common types of communication in .... world.

a) human b) animals c) plants

5. When your eyes see a red traffic light, it sends a signal to you to ....

a) stop b) increase your speed c) decrease your speed

6. Different .... represent different letters of alphabet in Morse code.

a) symbols and dashes b) dashes and dots c) symbols and dashes

7. Morse code consist of .... Beeps known as dots and .... beeps known as dashes.

a) short, long b) long, short c) long, long

8. If two persons communicate with each other by Morse code using light flashes, this means that the sender and the receiver will depend on the sense of .... in their communication.

a) sight b) smell c) hearing

9. The way by which bee can communicate with each other is ....

a) echolocation b) dancing c) flash light

10. All the following are examples of communication electronic devices except ....

a) computer b) cell phone c) knife

11. Sending smelly messages when there is a shortage of food happens among ....

a) ants b) beetles c) humans

12. Bats use their .... to get information about their surrounding in the dark.

a) nose b) ears c) eyes

13. Echolocation is the use of ....-pitched sounds for finding food. .

a) low b) medium c) high

14. The echo turns into .... that a blind man can feel in this thumb while holding his special cane.

a) light b) vibrations c) heat



B) Choose from (B) what suits it in (A):

(A)	(B)
1. Watching TV	a. is a type of communication in animals only.
2. Echolocation	b. is a type of communication in both animals and humans.
3. Displaying light	c. is a type of communication in human only.

1. ………………… 2. ……………… 3. …………………

(A)	(B)
1. High-pitched sound	a. is produced by humpback whale in summer.
2. Low-pitched sound	b. is produced by humpback whale in winter.
3. Thumbs-up	c. is a code that means that you say 'Yes'.
4. Thumbs-down	d. is a code that means that you say 'No'.

1. ………………… 2. ……………… 3. ………………… 4. ………………… 5. …………………

C) Complete:

………………… communicate by dancing to tell the others where to find food.

………………… communicate by sending a smelly message.

………………… communicate by singing.

D) Give reason for:

1. The songs of humpback whales have high-pitched sound during winter months.

____

3. We use the expressions on face during talking with each other.

____



Worksheet (10)

(A) Write the scientific term of each of the following:

1- A force that you make to change the direction of an object towards you.
(……………………….)

2- A force that you make to change the direction of an object away from you.
(……………………….)

3- It is a push or pull that is applied to an object causes it to change its position.
(……………………….)

4- It is a force that is exerted when objects rub against each other.

(……………………….)

(B) Look at the opposite figure, then answer the following question:

1-In the opposite figure what happens if we increase the number of fire extinguishers fixed on the cart.

____

____

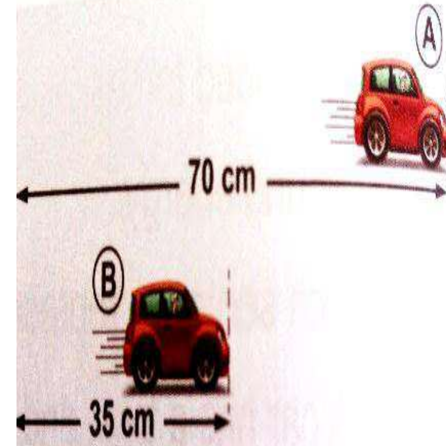
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2- The following figure shows two similar toy cars, study the figure then answer the questions below:

Which of these two cars is affected by a greater force?

(Give a reason for your answer).

____





(c) Put (√) or (x):

1-Lifting a book upward needs more energy than pushing a truck. (   )

2-You need energy to push a car forward or backward. (   )

3-Using a remote control of television needs a pushing force that acts on its buttons. (   )

4-When a car crashes into a wall, it will not stop. (   )

(D) Give a reason for the following:

1-The shockwave truck is faster than the normal truck.

____

____

____

2-Anybody moves on the ground is usually affected by a force opposes its direction of movement.

____

____

____

3-If a ball moves on the ground, its speed decreases till it stops.

____

____

____



E- Complete the following sentences using the words below:

(Friction – balanced – opposes – unbalanced)

1- Any object moves from its place when the forces acting on it is………………

2- The force that slows down or stops motion is called………………

3- Friction is a force that ……………… motion.

4- When a book is lying on a table without moving, the forces acting on it are ……………..

F-What happens if …..?

A jet engine is placed in a normal truck instead of its normal engine.

………………………………………………………………





Worksheet (11)

A-Cross out the odd word:

1. Sound energy – Light energy – Thermal energy – Chemical energy.

(…………………………)

2. Radio – Electric fan – washing machine – Electric mixer.

(…………………………)

B-Write the scientific term of each of the following:

1- The form of energy that the object has due its movement.

(………………………..)

2- The energy that is used to operate all electric devices.

(………………………..)

3- It is the stored potential energy in a compressed spring.

(………………………)

4- The energy that is stored in both the human food and car fuel.

(………………………)

C- Correct the underlined words:

1- When an object moves down, it has more active form of energy known as <u>potential energy</u>. (………………………)

2- <u>Sound energy</u> is used in cooking food. (……..…………………..)

3- A car battery stores a form of <u>kinetic energy</u> known as chemical energy. (………………………)

4- Gasoline contains <u>electric</u> potential energy. (………………………)



D- Choose the correct answer:

1-When an object moves down a ramp, its stored energy…………

a. Increases.
b. Doesn't change.
c. Changes to a less active form of energy.
d. Changes to a more active form of energy.

2- All the following energies cannot be seen, <u>except</u>………………

a. Thermal energy.
b. Electrical energy.
c. Light energy
d. Sound energy.

3- All the following examples store chemical energy, <u>except</u>…………..

a. Food.
b. Natural gas.
c. A battery.
d. A compressed spring.

4- When the ice-skater jumps high, the force affecting the skater must be……………

a. Balanced.
b. Unbalanced.
c. Created.
d. Destroyed.





E- Complete the following table (energy changes):

Example	From	into
1-Electric fan	……………………	………………………
2-Door bell	……………………..	………………………
3-Radio	…………………..	………………………
4-Electric lamp	……………………	………………………
5-Cellular phone	………………….....	………………………

F-What happens if ……?

1- A roller coaster moves from up to down. (According to its energy).

……………………………………………………………………………………

2- A roller coaster stops. (According to its energy).

……………………………………………………………………………………





Worksheet (12)

A- Choose from column (B) what suits it in column (A):

(A)	(B)
1. Speed	a. is changed into kinetic energy in the car engine.
2. Kinetic energy	b. is decreased by increasing the speed.
3. Potential energy	C. is increased by increasing the speed.
	d. is measured by diving the distance over the time.

1-………….. 2-……………. 3-……………

B- Choose the correct answer:

1- By increasing the mass of an object moves down a ramp, the speed of this object will…………..

a. Become zero.
b. Decrease.
c. Increases.
d. Not change.

2- When the speed of a moving object increases, so its ……….. energy will increase.

a. Kinetic
b. Potential
c. Sound
d. Light



3- Which of the following relations can be used to calculate the speed of a moving object?

a- Speed = Distance – Time
b- Speed = Distance x Time.
c- Speed = Distance + Time.
d- Speed = Distance ÷ Time.

4- If a bicycle travels 30 meters in 5 seconds, so its speed equals ……………..

a- 6 km/hr. b- 3 km/hr. c- 7 km/sec. d- 6 m/sec.

C- Complete the following sentences:

1. To calculate the speed of a body that moves down a ramp, we need to know the ………… of the ramp and the ………… taken to reach the end point of the end point of this ramp.

2. If you walk from your school to your house, you will take a ………………. time than if you ride a bicycle to travel the same distance.



D- Problems:

1-Calculate the speed of a train that travels a distance equals 200 kilometers in 4 hour.

…………………………………………………………………………………………

2- If your school is 3 kilometers away from your house and it took 1 hour to walk there, calculate your rate of speed.

…………………………………………………………………………………………

3- If a bus traveled 600 kilometers in 6 hours, calculate the average of the bus speed.

…………………………………………………………………………………………





Worksheet (13)

- **Choose the correct answer:**

1-When the objects collide with each other,………is transferred them.

a) time

b) distance

c) energy

d)nothing

2- When the cricket bat hits the ball, the ball direction ……… and the ball speed ………..

a) doesn't change – doesn't change .

b) doesn't change – changes .

c) changes – doesn't change.

d) Changes – changes.

3. Collisions usually produce ………….

a) Solar energy.

b) Sound energy.

c) gravitational potential energy.

d) chemical potential energy.

4. Airbag is folded into all the following places in the car, except…………

a) doors.

b) tires.

c) steering wheel.

d) dashboard .



5. When a car stops suddenly, the passengers move …………

a) back ward .

b) upward.

c) forward.

d) downward.

- **Give reasons for:**

1- Seatbelts in cars are very important.

………….. ……………………………………………

2- The speed of the ball increases when the bat hits it hardly.

……………………………………………………….

- **Put (✓) or (x) :**

1- When a cricket bat hits the ball, its potential energy transfers to the ball. ( )

2- During a crash between two cars , the potential energy transfers from the faster car to the slower one . ( )

3- After car collision , the air bags deflate as fast as they inflate . ( )

4- Seat belt enables the driver to see the road clearly. ( )

5- When a fast car hits a very big tree, the kinetic energy of the car transfers into the tree. ( )

- **Complete the following sentences:**

1. As a result of collision between the ball and the bat the direction of ball will ……………..

2. During a car crash , the …………… is inflated with a gas to provide a soft cushion.

3. Among safety equipment which are used during collision of cars ………. and …………



Worksheet (14)

• Complete the following sentences:

1- When two cars collide with each other, some of transferred energy may be in the form of heat,…………. and ………….

2- A car covers 80 meters in 4 seconds, so it moves at a speed equals……….. m/sec

3- A car with speed =100km/hr, Its kinetic energy is …………. Than that of another car with speed =60 km/hr.

4- Speed is a ……………. quantity.

5- The speed of two objects is equal, if they cover the same …………. at the same……………

• Choose the correct answer:

1. What happens when a driver presses the brakes and stop suddenly? ………………..

a) The passenger moves back ward
b) The passenger moves forward
c) The passenger remains stable
d) No correct answer

2. How can we calculate speed ? ………..

a) Time / Distance
b) Distance/ time
c) Mass / time
d) Distance/ mass

3. An object keeps moving with same speed when …………….

a) Its kinetic energy decreases.
b) Its potential energy increases.
c) No another force stops it .
d) Another object collides with it.



4. When two cars moving in opposite directions collide, the ……….

a) Energy of the fast car is more and causes more damage
b) Energy of the fast car is small and causes less damage.
c) Energy of the low car is more and causes more damage
d) Energy of the small car is small and causes less damage

5. If two objects collide together, the energy before collision is …………. The energy after collision.

a) equals
b) more than
c) less than
d) greater than

- ***Write the scientific term for each of the following:***

1. The process in which two objects or more crash into each other and includes on energy. (………………….)
2. One of the factors that affects the kinetic energy. (………………….)
3. It is a measurement of how fast something is moving. (………………….)

- **Put (√) or (x):**

1. Speed is measuring how or hot or cold something is. ( )
2. Drivers should drives as fast as possible to avoid accident. ( )



3. If a car covered a distance of 10m in a time of 2 second, so the speed of the car is 5m/sec. ( )
4. Kilometer/hour is the only measuring unit of speed. ( )
5. A heavier object causes more damage than a lighter object. ( )

Worksheet (15)

- ***Choose the correct answer:***

1. **When a person is riding his bike at high speed and hits an empty litter box, which of the following is the expected effect after collision?**
   a) The box moves.
   b) The speed of the bike increases.
   c) The speed of the bike decreases .
   d) A and C .
2. **If a motorcycle hits an adult pedestrian in the street , it may cause ……**
   a) Slight injuries , due to the high- speed
   b) Severe injuries, due to the low -speed
   c) Severe injuries, due to the high – speed
   d) No correct answer
3. **Fast moving objects, ………………….**
   a) Produce great kinetic energy
   b) Cause more damage during a collision
   c) Consumes more fuel
   d) All the previous answer



4. In newton's cradle , the balls stop , due to…………

a) The friction between the string and other moving parts

b) the kinetic energy is converted into sound energy.

c) Some energy is lost ,when the balls pass through the air

d) All the previous answer

5. In newton's cradle, kinetic energy is converted into …………….

a) Light energy

b) Thermal energy

c) Sound energy

d) B and C

6. On a roller coaster, the maximum potential energy is ………………

a) At the bottom of a big hill

b) When going around a corner

c) When going upside down

d) At the top of a big hill

7. The kinetic energy of a vehicle increases when ……………….

a) Its speed decreases

b) Its Mass decreases

c) Its mass and speed increase

d) No correct answer

8. Which one is the fastest?

a) A kid runs 400 meters in 5 minutes.

b) A girl rides a bike and covers 400 meters in 2 minutes.

c) A kid walks 400 meters in 10 minutes.

d) A boy rides a car and covers 400 meters in 1 minute.



- ***Put (✓) or (x) :***

1. **As the mass of an object increases, its kinetic energy increases ( )**
2. **When the angle of the ramp decreases, the speed decreases. ( )**
3. **During collisions of the Newton's cradle balls , the amount of kinetic energy remains as it is. ( )**
4. **As the speed increases, the amount of fuel used decreases. ( )**
5. **The mass of moving body affects its speed. ( )**

- ***Complete the following sentences using the given words :***

(after – doesn't disappear – sound energy – before – air – mass – large)

1. The energy…………., but changes from one form to another
2. In newton's cradle, an amount of energy is lost in the form of ………….. energy.
3. When a collision occurs, the energy……………….collision is equal to energy……………. collision.
4. When ……………. of an object increases , its kinetic energy increases.
5. Vehicles with…………… Mass cause great damage during collision.
6. In newton's cradle, the balls lose some energy in ………………….



- ***Complete the following sentences using the words between brackets :***

1. If a truck 's mass is 1 ton , it has ………………… Energy than a 2 – ton truck has. (More – less)
2. The relation between the speed of a moving object and its kinetic energy is a/an …….. ……….. relation. (Direct – inverse)
3. When the car fuel is completely runs out , the car's ………………….. becomes zero . (Mass – speed)
4. When we lift-up the first ball of the Newton's cradle,…………. energy is stored. (Potential – kinetic)
5. The is a/an …………… relation between collision impact and speed. (Inverse – direct)





Model answers

Worksheet (1)

1-Classify:

- Cold polar regions (Arctic fox-polar bear- penguin).

- Hot deserts (camel fennec fox – desert lizard)

- Oceans (octopus-bull shark).

2- Adaptation. **3- Camouflage.**

4 - 1- it has a tan – colored coat. **2- It has extra – large ears.**

5-Give reason:

a- Because waxy layer protects palm leaves from drying out.

b- To trap warm air against the skin to keep its body warm.

c- Due to the movement of blood in blood vessels through the penguin's feet.

6-Complete the table:

Polar bear: It has white fur to help it blend in with the snow.

Brown bear: Forests.

Caracal & fennec fox: It has extra-large ears.

It has a special shape of ears.

Lizards: they have colorful scales that make them hard to see among the rocks.



7- choose

1- Death. **2- Looking for shade area**

3-Camouflage. **4- immigration.**

5- Foxes. **6-Long.**

8-What happens if……?

The digestion will not complete.

9- The dogs which live in cold environment have thick fur to keep the body warm and adapt with the cold weather.

Worksheet (2)

Fennec fox

Habitat: hot deserts.

Structural: 1-Sandy colored fur/ 2-extra-large ears.

Behavioral: It lives in burrows.

Arctic fox

Habitat: Tundra

Structural: It has short ears and legs – It has a special shape of ears.

Behavioral: It lives in burrows - It eats different kinds of food.

Bull shark

Habitat: fresh water & salt water.

Structural: Its body is adapted to survive in fresh water.

It has a dark and white belly (countershading).

It has sharp teeth.



Behavioral: It can hunt in different places.

It hunts in the day as well as the night.

Chameleon

Habitat: Tropical rainforest.

Structural: It has brightly colored scales.

It has a very long sticky tongue.

It has v- shaped feet and a tail like a hand.

Behavioral: It open its mouth wide.

It changes the colors of its scales.

Worksheet (3)

Table 1

Acacia tree (fennec fox –palm tree- Barbary fig plant- starred agama lizard).

Kapok tree (panther chameleon).

Table 2

Acacia tree (taproot- tiny leaves).

Kapok tree (butter roots – hand shaped leaves).

Table 3

Acacia tree (savannah forest – tiny leaves growing).

Pine tree (snow – needle leaves)

Water lily (wetland – wide leaves)

Choose:

1-(d)

2-(b)



3-(b)

4-(b)

5-(c)

6-(c)

What happens of ……?

This plant may die or may adapt the new environmental conditions to survive and grow in its new environment.

Worksheet (4)

A-Write the scientific term of each of the following:

1-Stomach **2- Saliva** **3-Large intestine**

4-small intestine **5-Teeth** **6-Tongue**

6- Esophagus

B-Complete:

1- Sharp – flat.
2- Four – stomach.

C- **Choose**:

1-e **2-d** **3-a**

4-b **5-c**

Worksheet (5)

Table 1:

Inhalation:

Moves downward **increases** **oxygen gas**



Exhalation:

Moves upward **decreases** **carbon dioxide gas**

Table 3:

1-d 2-c 3-a 4-b

Table 4:

Digestive (anus - stomach - small intestine – esophagus – large intestine liver – pancreas)

Respiratory (trachea-lungs-diaphragm-nose)

Write the scientific term of each of the following:

1- Mouth.
2- Saliva.
3- Respiration process.
4- Stomach.

Label the organs of the Digestive system

Mouth – Esophagus – Liver – Stomach – Small intestine – large intestine

Write the name of these organs

Large intestine

Stomach

Small intestine

Mouth

Esophagus



Label the organs of the respiratory system

1-Throat **2-Trachea**

3-Lungs **4-Diaphragm**

Worksheet (6)

1-Correct the underlined words:

1- Oxygen.
2- Gills.
3- Water.
4- Structural.

2- Write the scientific term of each of the following:

1- Wildfires.
2- Floods.

3-What happens if……..?

1- The number of amphibians will decrease.
2- Amphibians will survive and their number increases.
3- They can live only underwater.

Worksheet (7)

Table (1)

A-3 **B-4** **C-2** **D-1** **E-6** **F-5**

2-Write the scientific term of each of the following:

1-Reaction time.

2-Electrical impulses.

3-Sensory receptors.



3- Complete the following sentences:

1- Nose
2- Fasters
3- Behavioral
4- Eye sight and hearing.

4- Put (√) or (x):

1 (x) **2 (√)** **3 (x)** **4 (√)** **5 (x)**

Worksheet (8)

1- Choose:

1-b	**2-a**	**3-c**
4-b	**5-b**	**6-a**
7-b	**8-c**	**9-c**

2-Write the scientific term of each of the following:

1- Eyes	2-Mirror like membrane	3-Brain
4-Moon	5-Stars	6-Light
7-Eye animal	8-tapetum lucidum	9-Nocturnal

3-Look at the following figures then answer:

a- Smooth surface because the rays will reflect at the same angle.
b- Rough surface because the rays will reflect in different directions.
c- Straight line.



Table (1)

1-d	2-c	3-b	4-a

Table (2)

1- b	2- d	3- a	4- a

Worksheet (9)

1-b	2-c	3-c
4-a	5-a	6-b
7- a	8-a	9-b
10- a	11-a	12-b
13-a	14-b	



Worksheet (10)

(A) Write the scientific term of each of the following:

1-Pull.
2-Push.
3-Force.
4-Friction.

(B) Look at the opposite figure, then answer the following question:

B- 1- It will move faster.

B- 2- Car (A) because it travels a farther distance than car (B).

C-Put (√) or (x).

1- (x) **2 (√)** **3 (√)** **4(x)**

D-1- Because the shockwave truck starts to stop gradually.

D-2-Because there is a friction force between the moving body and the ground that acts in the opposite direction of the body movement.

D-3- Due to the friction force between the ball and the ground that acts in the opposite direction of ball movement.

E- Complete the following sentences using the words below:

1- Unbalanced.
2- Friction.
3- Opposes
4- Balanced.

What happens if…..? The truck, start moving and reach record speed



Worksheet (11)

A- Cross out the odd word:

1- Chemical energy.

2-Radio.

B- Write the scientific term of each of the following:

1-Kinetic energy.

2-Electrical energy.

3-Elastic potential energy.

4-Chemical potential energy.

C- Correct the underlined words:

1- Kinetic energy.
2- Thermal energy.
3- Potential energy.
4- Chemical.

D- Choose the correct answer:

1-d 2-c 3-d 4-b

E- Complete the following table (energy changes):

Example	From	Into
1-Electric fan	Electrical	Mechanical
2-Door bell	Electrical	Sound
3-Radio	Electrical	Sound
4-Electric lamp	Electrical	Light and thermal
5-Cellular phone	chemical	Sound and light



F-what happens if……?

1-The stored energy in the train is changed into kinetic energy.

2- Its kinetic energy becomes zero.

Worksheet (12)

A-Table

1-d **2-c** **3-a**

B-Choose:

1-c **2-a** **3-d**

4-d

C- Complete the following sentences:

6- Distance - time.

7- -longer

D- Problems;

1-Speed =Distance ÷ time

Speed=200÷4

Speed= 50 km/hr.

2- Speed =Distance ÷ time

Speed=3÷1

Speed=3km/hr.

3- Speed =Distance ÷ time

Speed=600÷6

Speed=100km/hr.





Worksheet (13)

- **Choose the correct answer:**

1. (c) Energy
2. (d) Changes – changes
3. (b) Sound energy
4. (b) Tires
5. (c) Forward

- **Give reasons for:**

1. They prevent passengers from moving forward when cars stop suddenly.
2. The bat transfers the kinetic energy to the ball .

- **Put (√) or (x) :**

1. (X)
2. (X)
3. (√)
4. (X)
5. (X)

- **Complete the following sentences:**

1. Change
2. Airbag
3. Seatbelt – air bag



Worksheet (14)

- **Complete the following sentences:**

1. Light – sound
2. 20 m/sec
3. More
4. Physical
5. Distance

- **Choose the correct answer:**

1. The passenger moves forward
2. Distance/ time
3. No another force stops it
4. Energy of the fast car is more and causes more damage.
5. Equals

- **Write the scientific term for each of the following :**

1. Collision
2. Object's mass, speed or angle of inclination
3. Speed

- **Put (√) or (x) in front each sentence:**

1. (X)
2. (X)
3. (√)
4. (X)
5. (✓)



Worksheet (15)

- ***Choose the correct answer :***

1. (d)A and C
2. (c)Severe injuries, due to the high speed
3. (d)All previous answers
4. (d)All previous answers
5. (d)B and C
6. (d)At the top of a big hill
7. (c)Its mass and speed increase
8. (d)A boy rides a car and covers 400 meters in 1 minute.

- ***Put (√) or (x) :***

1. (√)
2. (√)
3. (X)
4. (X)
5. (√)

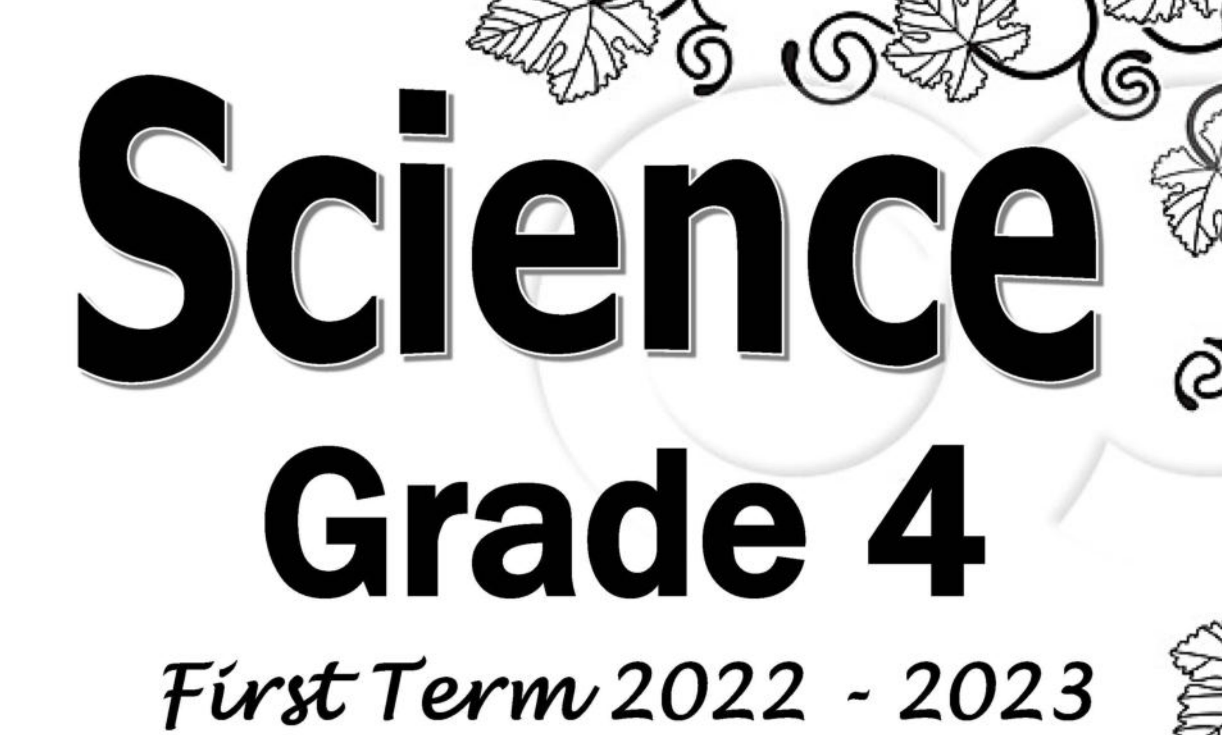
- ***Complete the following sentences using the given words:***

1. ***Doesn't disappear***
2. ***Sound energy***
3. ***Before – after***
4. ***Mass***
5. ***Large***
6. ***Air***



- ***Complete the following sentences using words between brackets :***

1. *Less*
2. *Direct*
3. *Speed*
4. *Potential*
5. *Direct*



Final Revision

Mr. Ahmed Elbasha

* طبقاً لأخر تعديل في المادة للعام الدراسي 2023-2022



Final Revision

Mr. Ahmed Elbasha

(1) Choose the right answer:

1. Moving faster or slower means that there is a change in the .... of an object.

a. direction. b. speed. c. color. d. temperature.

2. The organism that has no eyes in the following species, is....................

a. tarsier monkey. b. golden frog.
c. barbary fig. d. bull shark.

3. All the following ways can be used to communicate between people except..................

a. reading. b. writing. c. speaking. d. flying.

4. A ball at the top of a hill stores....................energy.

a. sound. b. light. c. potential. d. chemical.

5. A firefly is not a bird, but it is a type of ....

a. amphibians. b. lizard. c. beetles. d. reptiles.

6. To increase the speed of moving object, you must give it more .... energy.

a. light. b. potential. c. sound. d. kinetic.

7. Most cars around us use .... as a fuel.

a. gasoline. b. sunlight. c. batteries. d. water.

8. Collision usually produce ....

a. solar energy. b. sound energy.
c. gravitational potential energy. d. chemical potential energy

9. When light hits an object, a shadow of this object is formed because ....

a. light can pass through the object. b. light cannot pass through the object.
c. this object reflects light. d. this object is a transparent object.

10. A very big truck needs .... to move.

a. very small engine. b. small engine.
c. very big engine. d. no engine.

11. Bull shark can live in ....

a. fresh water only.
b. salt water only.
c. seas, river, and mud.
d. rivers, seas, and oceans.

12. In the tug-of-war game, two teams ....

a. pull the rope in the same direction.
b. pull the rope in the opposite direction.
c. push the rope in the same direction.
d. push the rope in the opposite direction.

13. When a Jerboa hears the sound of a moving snake, it ....

a. remains standing in its place.
b. jumps to hunt the snake.
c. makes sounds to frighten the snake.
d. jumps quickly to run away from the snake.

14. When your eyes see a red traffic light, it sends a signal to you to ....

a. increase your speed.
b. decreases your speed.
c. keep your speed as it is.
d. stop.

15. If the eye lens is made up of an opaque material, then this eye ....

a. can see the near object only.
b. can see the far object only.
c. can see both the far and the near objects.
d. cannot see any objects around it.

16. Humans and Cars are similar in ....

a. not able to produce sound energy.
b. not able to produce kinetic energy.
c. similar in obtaining energy to move.
d. similar in adaptation to live and survive.

17. Reading and Writing are common types of communication in .... world.

a. Human.
b. Animals.
c. Plants.
d. Birds.

18. Seatbelts work when the car ....

a. decrease its speed gradually.
b. increase its speed gradually.
c. suddenly stops.
d. stops gradually.

19. Sense organs collect information and send it to .... for processing and understanding.

a. hands.
b. legs.
c. brain.
d. stomach.

20. All of the following are transparent objects, except ....

a. glass.
b. water.
c. paper.
d. air.

21. If we press the gas pedal while the car is moving on a road at a speed= 70 Km/hr. so, the speed of the car may reach .... Km/hr.

a. 20. b. 40. c. 60. d. 80.

22. .... is considered as a behavioral adaptation in the panther chameleon.

a. puffing up its body during danger.
b. each eye can move independently.
c. V-shaped feet.
d. long sticky tongue.

23. In penguin's feet, ... weave around each other.

a. warm blood vessels and cold blood vessels.
b. warm blood vessels and its toes.
c. cold blood vessels and its toes.
d. cold blood vessels and thick downy feathers.

24. All types of energy can be classified into two main groups which are ....

a. light energy and sound energy.
b. chemical energy.
c. potential energy and kinetic energy.
d. magnetic energy.

25. Push or pull actions are considered as types of ....

a. force. b. device. c. energy. d. adaptation.

26. When a car stops suddenly, the passenger moves ....

a. backward. b. forward. c. upward. d. downward.

27. The stored energy in a battery of flashlight changes into ...., when it is turned on.

a. chemical energy.
b. sound energy.
c. light energy.
d. potential energy.

28. The friction force between ....and the road causes a decrease in the speed of the car.

a. car tires. b. car horn. c. gas pedal. d. car door.

29. The presence of an insulating layer of ...., keep the penguin's body warm.

a. protein and thick downy feathers.
b. fat and thin downy feathers.
c. fat and thick downy feathers.
d. protein and thin downy feathers.

30. All of the following are forms of codes, except ....

a. thump up and thump down.
b. expression of faces.
c. writing.
d. swimming.

31. When the object collides with each other, ... is transferred between them.

a. time. b. distance.

c. energy. d. nothing.

32. In Morse code, long flashes can be used instead of ....

a. dots only. b. dashes only.

c. both dots and dashes. d. neither dots nor dashes.

33. If the angle of inclination of the road increases, the kinetic energy of an object moving downward on it, will ....

a. decrease. b. increase.

c. remain as it is. d. be destroyed.

34. Fennec foxes and arctic foxes live in burrows, this belongs to ....

a. only structural. b. only behavioral.

c. both structural and behavioral. d. neither structural nor behavioral.

35. A speed is a measurement of how .... something is moving.

a. long. b. tall. c. fast. d. heavy.

36. A very big truck needs .... to move.

a. very small engine. b. small engine.

c. very big engine. d. no engine.

37. Camouflage means that the animal ....

a. can be seen easily among its surrounding.

b. is hard to be seen among its surrounding.

c. is easily to be seen by its prey.

d. can be seen easily by its predators.

38. The five senses of humans include ....

a. sight, hearing, smell, touch, and movement.

b. sight, movement, taste, touch, and smell.

c. taste, touch, movement, hearing, and smell.

d. sight, hearing, smell, taste, and touch.

39. The starred agama keeps cool during a hot sunny day in desert by ....

a. eating green vegetables. b. drinking more water.

c. secreting more sweat. d. finding a shade area.

40. The system responsible for moving your hand away from danger, such as touching a hot cup of tea, is the .... system.

a. digestive
b. respiratory.
c. nervous.
d. stomach.

41. When you move something toward you, this represents ....

a. pushing force.
b. light energy.
c. pulling force.
d. sound energy.

42. Cheetah has a .... heart.

a. large weak.
b. small weak.
c. large powerful.
d. small powerful.

43. Bees can communicate with each other by ....

a. Morse code.
b. dancing.
c. flash lights.
d. echolocation.

44. All of the following are nocturnal animals, except ....

a. fishing cats
b. cactus
c. tarsier monkey
d. bats

45. In gas oven .... Energy changes into .... energy.

a. chemical, sound
b. heat, electric
c. chemical, heat
d. chemical, light

46. The undigested materials of the food pass from the small intestine into ....

a. liver
b. esophagus
c. stomach
d. large intestine

47. The car's .... helps in burning the fuel, and converting the potential energy into kinetic energy.

a. tires
b. car lamps
c. safety belt
d. engine

48. The eyes of panther chameleon are belong to .... adaptation

a. structural
b. behavioral
c. behavioral and structural
d. no correct answer

49. Mirror has a .... surface

a. shiny
b. smooth
c. rough
d. A & B

50. The .... medium that allows light to pass through it.

a. Opaque
b. Dark
c. Transparent
d. All the pervious answers

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51. .... processes, interprets and understands information.

a. Brain
b. Spinal cord
c. Nerves
d. Body parts

52. All the following are examples of codes except ....

a. face expressions
b. hand waves
c. traffic light
d. watching TV

53. The root of palm tree helps it to ....

a. Resist the winds
b. Reach to the underground water
c. Fix the plant in soil
d. All the previous answers

54. The smooth, flat and shiny surface of mirror .... light waves energy.

a. absorbs
b. refracts
c. reflects
d. transmits

55. The system responsible for moving your hand away from danger, such as touching a hot cup of tea, is the .... system.

a. digestive
b. respiratory
c. nervous
d. stomach

56. From the structural adaptation of water lily plant is that ....

a. it has long roots.
b. it has sharp spines.
c. it has tiny leaves.
d. it has wide leaves.

57. When a car suddenly stops, the passengers move ....

a. backward.
b. forward.
c. upward.
d. downward.

58. The speed of an object is measured in .... or meters per second.

a. kilograms per hour
b. grams per second
c. kilometers per hour
d. kilograms per kilometers

59. Animals can communicate with each other through ....

a. sounds and lights.
b. talking.
c. reading.
d. writing.

60. Which of the following allows the light to pass through it ? ....

a. A rock.
b. Moon.
c. Wood.
d. Glass.

61. Bats are .... animals.

a. nocturnal
b. morning
c. not hearing
d. not flying

62. If a car covered a distance of 10 meters in a time of 2 seconds, so the speed of the car is ....

a. 50 m/sec. b. 20 m/sec. c. 20 m/sec. d. 5 m/sec.

63. .... energy affects the sensory receptors in the eye causing vision .

a . sound b. Kinetic c. Light d. Magnetic

64. The force that slows down (decreases) the speed is called ....

a. push. b. gravity. c. friction. d. pull.

65. The organ responsible for the sight sense is ....

a. the ear. b. the tongue. c. the nose. d. the eye.

66. Ability to do work is ....

a. energy. b. force. c. push. d. pull.

67. An animal has the ability to turn its head in all directions is the ....

a. snake. b. jerboa c. dolphin. d. owl.

68. Which of the following is a source of light ? ....

a. Eye. b. Moon. c. Fire. d. Mirror.

69. Tapetum lucidum exists in all of the following, except ....

a. the horse. b. the cat. c. the human. d. the dog.

70. Each of the following is considered a source of light, except ....

a. the fire. b. the Sun. c. the lamp. d. the eye.

71. .... is one of the behavioral adaptations that help the animal protect itself from enemies.

a. Camouflage b. Extinction c. Immigration d. Reproduction

72. To calculate the speed of a body, we need to know ....

a. distance only b. time only c. energy and time d. distance and time

73. All the following are components of the nervous system except ....

a. spinal cord b. heart c. nerves d. brain

74. The communication between ants occurs by ....

a. movement b. light c. smell d. sound

75. Speed is measured in ....

a. second/meter b. hour/kilometer c. meter/second d. meter/kilometer

76. Bees communicate using ....

a. light b. sound c. movements d. internet

77. The energy stored in a compressed spring is a .... energy.

a. chemical b. kinetic c. potential d. electrical

78. The fatty layer in penguins is considered a/an .... material which keeps the penguin's body warm.

a. transparent b. opaque c. insulating d. cold

79. Digestion of food begins in the mouth and ends in ....

a. the anus b. the stomach

c. the small intestine d. the large intestine

80. What happens, when a car stops suddenly? ....

a. The passenger moves backwards. b. The passenger moves forwards.

c. The passenger remains stable. d. (a) and (b).

81. Which of the following stores energy? ....

a. Food. b. Battery.

c. Gasoline. d. All the previous answers.

82. A boat moves a distance of 30 meters in a time of 10 seconds, so its speed is ..... m/s.

a. 3 b. 10 c. 30 d. 300

83. Fish extracts oxygen out of water through ....

a. skin b. gills c. lungs d. fins

84. The .... system helps us to translate messages that come from our surroundings, such as smells and sounds.

a. respiratory b. digestive c. nervous d. circulatory

85. Raising the thumb up or lowering it down is a kind of ....

a. colors b. codes c. waves d. lights

86. The force that pulls the objects down toward the center of the Earth is .... force.

a. gravity b. pushing c. pulling d. wind

87. One of the light-reflecting materials is ....

a. wood b. mirrors c. plastic d. paper

✸(2) Complete the following sentences using the words between brackets:

1. **From the opaque objects ....**

(carton - glass)

2. **The gas oven converts .... energy stored in the natural gas into heat energy to cook the food.**

(chemical - electrical)

3. **The speed of moving object = ...**

(distance x time - distance / time)

4. **Fish have ....to breath.**

(gills - lungs)

5. **One of the light reflecting materials is ....**

(wood - mirror)

6. **....................is a source of light.**

(the Sun - the eye)

7. **Bats use ....as a means of communication with each other.**

(sound - light)

8. **The ability to do a work is called ....**

(energy - gravity)

9. **The time that the body takes to react to different information from the environment is called ....**

(reflex action - reaction time)

10. **If Noor travels a distance of 10 km in two hours, then she is moving at a speed of ....**

(10 km/hr. - 5 km/hr.)

11. **What carries the message from your eyes to your brain when you see something ? ...**

(Nerves - Muscle)

12. **What kind of energy is stored inside the battery ? ....**

(Chemical energy- Heat energy)

13. **The force that pulls things down is to the ground ....**

(friction - gravity)

14. **The echo sound feature depends on ....**

(hearing sense - sight sense)

15.................... destroys the lungs and causes many diseases.

(Breathing - Pollution)

16. An animal that can escape from enemies because of the Length of its hind Leg ....

(Arctic fox - Jerboa)

17.................... mix and grind food inside the mouth.

(Teeth only - Teeth and tongue)

18. Fish breathe .... gas which is dissolved in water.

(oxygen - carbon dioxide)

19. An example of objects that allow light to pass through is ....

(lens - paper)

20. The fatty layer under the animal's skin which warms it is considered a .... adaptation.

(structural - behavioral)

21. The relation between speed and kinetic energy is....................

(direct - inverse)

22. When light is absorbed by an opaque object, ... is formed.

(tapetum lucidum - shadow)

23. We see most objects because they....................

(emit light - reflect light)

24. The blood transports .... gas from the lungs to all the cells of the body.

(oxygen - carbon dioxide)

25. Electric wire carries .... energy.

(kinetic - electrical)

26. The force that causes the falling down of fruits from the tree is the ....

(pushing force - gravity)

27. The speed of a body increases, when the time taken to cover a certain distance ....

(increases - decreases)

28. When .... forces act on a static body, it will move.

(balanced - unbalanced)

✸(3) Complete the following :

1. .... represents the main control center and is responsible for processing information.
2. echolocation property is used by................... and .... animals to locate their preys.
3. among safety equipment which are used during collision of cars .... and ....
4. if the kinetic energy of a moving body decreases, its speed will ....
5. ants use their sense of .... to communicate with each other, while bees use .... by doing a special dances to communicate with each other.
6. writing a code that uses the sense of .... to communicate.
7. if a bird flies up from the ground to a high tree, so its potential energy will ....
8. all living organisms, breathe in oxygen gas, and gives out .... as a waste product.
9. humans use lungs to breath, while fish use ....
10. some nocturnal animals have a mirror-like membrane on the back of their eyes called ....
11. Writing is a code that uses sense of .... to read.
12. The .... energy depends on the speed of a moving object.
13. In the electric bell, ... energy changes into .... energy.
14. Echolocation is a type of communication that depends on the sense of .... and it used by some animals such as .... and ....
15. To increase the .... energy of any moving object we must increase its speed.
16. dolphins have sharp sense of .... which they use to locate living organisms under water through the .... property.
17. to measure the speed of a moving bicycle we need to divide the .... it travels by the .... it takes to travel this trip.
18. The system which is responsible for moving your hand away when you touch a cup of hot water is the .... system.
19. Bats and special cane of blind people are similar in using .... property to locate objects.

20. The speed of a moving object on a smooth ramp is .... Than that of the same object that moves on a rough ramp.
21. a human can feel the hotness of a cup of coffee by using the sense of ....
22. Echolocation property is used by .... and .... animals to locate their preys.
23. As the speed of cars increases, the damage that occurs during collisions ....
24. The speed of two objects are equal, if they cover the same .... at the same amount of ....
25. Any object will move, if it has .... energy.
26. The speed moving ball on the ground decreases gradually until it stops due to the effect of .... force.
27. Light travels in .... line.
28. When objects collide with each other, ... is transferred between them.
29. In gas oven, ... energy changes into .... energy.
30. A human can pay attention to an alarm bell in case of danger through the sense of ....
31. When the jerboa is in danger, it starts to run away, this action occurs in a very short time called ....
32. .... is the central control system in the body
33. .... objects allow light rays to pass through them.
34. .... is the main source of light.

✹(4) Put (√) or (X) :

1. Wood is an opaque material ( )
2. when balanced force is applied on a body at rest, it moves. ( )
3. The sandy-color fur of fennec fox is an example of behavioral adaptation. ( )
4. When ecosystem is rapid changed, many organisms may die. ( )
5. The moon is not considered as a light source ( )
6. the sense of hearing of dolphins is stronger than that of human. ( )
7. sensory receptors in finger can distinguish between smooth and rough objects. ( )
8. fireflies communicate with each other through songs. ( )
9. Cat's eyes look like small lighted lamps at night. ( )
10. you need energy to make a force to move a chair from one place to another. ( )
11. the bus that covers 60 kilometers in 1 hour has a speed = 60 m/sec. ( )
12. digestion process begins in stomach with the help of salvia. ( )
13. Exposing to air rich in dust harms the respiratory system. ( )
14. The motion of an object is affected by a friction force. ( )
15. Animals communicate with each other by using different senses. ( )
16. Seatbelt is one of the safety equipment in cars. ( )
17. As human needs clean water to drink, fish needs clean air to breathe. ( )
18. humans can restore ecosystem as well as they can harm them. ( )
19. the angle of the incline affects the speed of an object moving on it. ( )
20. Radio is operated by sound energy, and produces electric energy. ( )
21. the small size of cheetah's heart help it in running so fast. ( )
22. Kinetic energy cannot be transformed into potential energy. ( )
23. the bus that covers 60 kilometers in 1 hour has a speed= 60 km/hr. ( )
24. pollution is one of the most dangerous problems, that affects all living organisms. ( )
25. The sense of smell is super in all animals. ( )
26. Morse Code is a communication system that is used by firefly. ( )
27. Force is necessary to move or stop an object. ( )

28. Bull shark can live in salt water only.	( )
29. The food passes through the large intestine before it goes into the small intestine.	( )
30. The sense of hearing of dolphins is stronger than that of human.	( )
31. if you want an object to move slower, you must give it more kinetic energy.	( )
32. The animals that cannot adapt to environmental change, the will extinct	( )
33. The fireflies communicate by lighting	( )
34. Energy is the ability to do work.	( )
35. Moon is a source of light.	( )
36. Camouflage is a type of adaptation that helps animals hide from predators	( )
37. Mirror is an example of smooth surface.	( )
38. Air enters lungs during the inhalation process.	( )
39. Inhaled air contains a large amount of carbon dioxide	( )
40. There is 1 type of adaptation	( )
41. The sense organs responsible for receiving smell of perfume is the nose	( )
42. Sun is the main source of light.	( )
43. The nocturnal animals have super sense help them to hunt at night.	( )
44. Wood is an opaque material	( )
45. The respiratory system is responsible for the entry of air into the body.	( )
46. Dolphins have a strong sight sense.	( )
47. When the roller coaster slides down fast, its kinetic energy increases	( )
48. Some animals can see at night.	( )
49. Wood is a transparent object that allows light to pass through it.	( )
50. Light travels in straight lines.	( )
51. The chemical energy in a battery can be converted into electrical energy.	( )
52. Red and green traffic lights are considered codes.	( )
53. The ear is the sense organ which is responsible for seeing objects.	( )
54. In order for the code to be translated, the brain must identify it.	( )
55. The brain is responsible for processing information.	( )

56. Energy is neither destroyed nor created from nothing. ( )

57. The nervous system is responsible for breathing. ( )

58. The Moon is a source of light. ( )

59. Food turns from complex to simple during the digestion process. ( )

60. While running and making an effort, the number of breathing times decreases. ( )

61. Nocturnal animals have eyes that are larger than human's eyes. ( )

62. Humans have a tapetum lucidum in their eyes to see at night. ( )

63. Gravity force is an upward pulling force . ( )

64. When the position of the body changes according to a fixed point, the body moves. ( )

65. Plants have two types of adaptation (structural and behavioral). ( )

66. Some animals can see at night. ( )

67. The Moon is a source of Light. ( )

68. The nervous system works separately from the senses. ( )

69. Human has a tapetum lucidum in his eye to help him see at night. ( )

70. The energy stored in a battery is called chemical potential energy. ( )

71. Exhaled air is loaded with oxygen. ( )

72. Unbalanced forces don't change the position of objects. ( )

73. Force is necessary to move or stop objects. ( )

74. Exposing to air rich in dust for a long time harms the human respiratory system. ( )

75. A moving object is not affected by friction force. ( )

76. Seatbelt is one of the safety equipment in cars. ( )

77. Animals communicate with each other by using different senses. ( )

✸(5) Correct the underline

1	Air enters the two lungs during **exhalation** process.	(……………………)
2	Bats use echolocation as they have super **sight** sense.	(……………………)
3	The eyes use **sound** energy to see.	(……………………)
4	**Speed** doesn't destroy, but it can only change from one form to another.	(……………………)
5	The **spinal cord** is responsible for processing information coming through eyes.	(……………………)
6	**Acacia tree** floats on the surface of water.	(……………………)
7	morse code uses dashes and **questions marks**, that there represent different letters of alphabet.	(……………………)
8	when you hear the fire alarm, your **eyes** send a signal to the brain.	(……………………)
9	During inhalation diaphragm moves **upwards**.	(……………………)
10	A cell phone is a device that is used in communication between **animals**.	(……………………)
11	**Sound** energy is used in cooking food.	(……………………)
12	the ability to do **force** or cause a change is known as energy.	(……………………)
13	as the object moves faster, its **potential** energy increases.	(……………………)
14	**Gravity** force slows down the moving car when the tires touch the ground.	(……………………)
15	**Agama lizard** has thick feathers and fat layer.	(……………………)
16	The **balanced** forces cause the object to move.	(……………………)

17	When you turn on a radio, the electrical energy changes into **light** energy	(.........................)
18	**Potential** energy depends on the speed of an object.	(.........................)
19	Moving an object towards you represents a **pushing** force	(.........................)
20	**Seatbelts** absorb the energy of the car due to its collision and gets inflated	(.........................)



✹(6) **Matching:**

1

A	B
1.Sound energy	**a.** it changes into another energy that can be stored inside the human body.
2.Light energy	**b.** when it reaches our ears, it causes hearing.
3.Thermal energy	**c.** when it reaches our eyes, it causes vision.
4. Stored chemical energy in food.	**d.** it is produced from electric heater.

1- **2-** **3-** **4-**

2

A	B
1. friction force	**a.** are the forces that act on any object to make it moves.
2. balanced forces	**b.** is the force that act in the opposite direction of the object's movement to stop it.
3. unbalanced forces	**c.** is the force that act in the same direction of the object's movement to stop it.
	d. are the force that act on any object that doesn't move.

1- **2-** **3-**

3

A	B
1. bats	**a.** makes a special dance to communicate with each other.
2. bees	**b.** using echolocation during flying
3. blind person's cane	**c.** its vibrations tell the blind person to the directions.

1- **2-** **3-**

4

A	B
1. Fireflies	**a.** depends on the sense of smell in their communication.
2. Whales	**b.** depends on the sense of hearing in their communication
3. Ants	**c.** depends on the sense of sight in their communication

1- **2-** **3-**

5

A	B
1. Camouflage	**a.** it helps us to see.
2. Smell	**b.** a type of adaptation that helps an animals to hide.
3. Pharynx	**c.** ants use it to communicate.
	d. it is a common organ in the digestive and respiratory systems .

1- **2-** **3-**

6

A	B
1. Motion	**a.** a muscle that has an important role in the respiration process.
2. Diaphragm	**b.** the ability to do work.
3. Energy	**c.** the change in the position of an object with respect a fixed point.

1- **2-** **3-**

7

A	B
1. Carbon dioxide	**a.** a gas necessary for respiration.
2. Oxygen	**b.** a structural adaptation whose function is similar to the lungs.
3. Gills	**c.** it helps us to see.
	d. is a gas that is produced during respiration process.

1- **2-** **3-**

8

A	B
1. Motion	**a.** The ability to do work.
2. Energy	**b.** The change in the position of an object with respect to a fixed point.
3. Gas oven	**c.** It is a pattern that has a meaning.
4. Code	**d.** It converts chemical energy into heat energy.

1- **2-** **3-** **4-**

✹(7) TRY TO ANSWER:

1

Look at the following figures, then answer the questions :

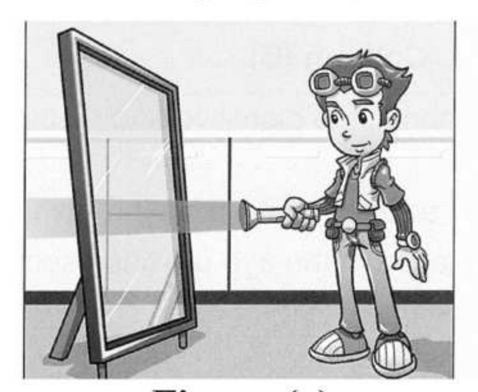


Figure (a)

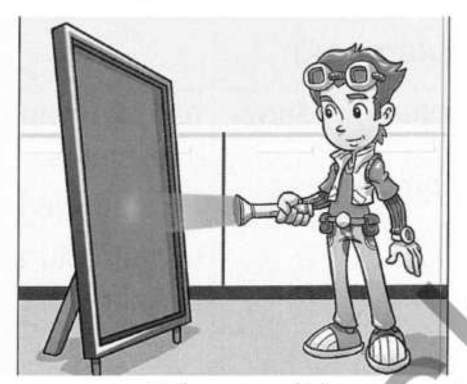


Figure (b)

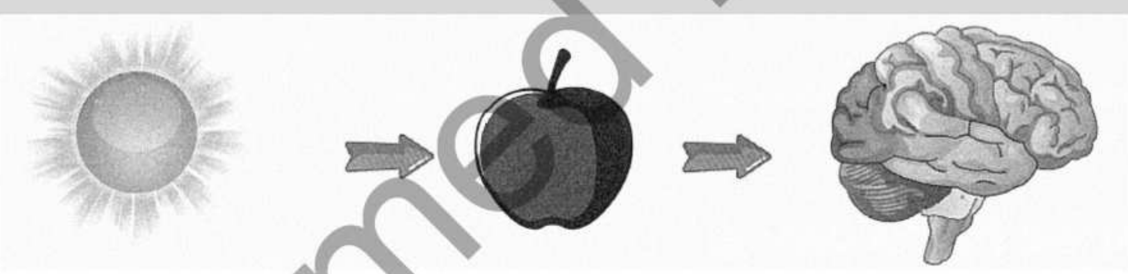
1. Which figure represents a transparent object?

....

2. Which figure represents an opaque object?

....

2

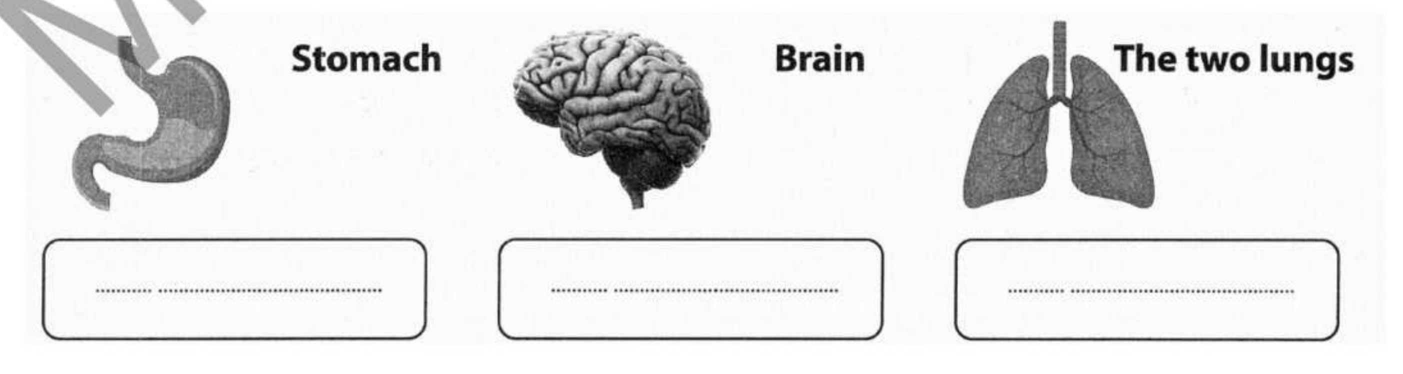


Complete after noticing the following figure.

The light falls on the ...., then it is reflected on the ...., so they transmit the message to ...., then it interprets it and translates it, finally we see the apple.

3

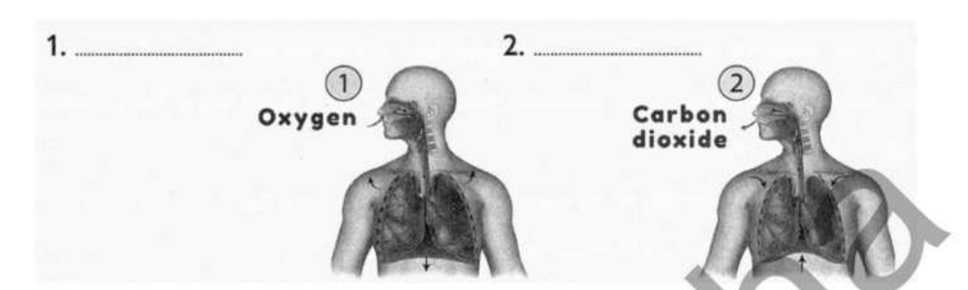
Write the name of the system which each organ belongs to:



4

Answer the following:

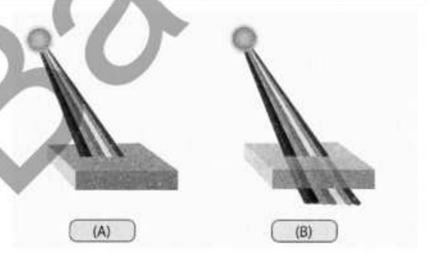
- Note the following two figures. Identify the name of each of the two processes in figures 1,2.



5

Answer the following:

- Look at the path of the light rays in pictures (A) and (B). Determine which of the two objects is opaque and which is transparent.



(Object) (A) is ....

(Object) (B) is ....

✹(8) Problem

1

Find the speed of a runner, if you know that he covers 300 meters in 30 seconds.

....

....

....

2

A truck travels a distance of 160 kilometers in 2 hours. <u>Find its speed</u>.

....

....

....

3

Amir rides his bike and covers a distance of 150 meters in 5 seconds.

<u>Calculate the speed of the bike.</u>

....

....

....

4

A car moves forward a distance 100 kilometers in time equals 2 hours.

<u>Calculate the speed of the car.</u>

....

....

....

5

If two cars moved at the same time for 20 .seconds, car (A) covered a distance of 100 meters, while car (B) covered a distance of 300 meters.

<u>Which one of the two cars has a higher speed?</u>

....

....

....

Model Answer

(1) Choose the right answer:

1. B	9. B	17. A	25. A	33. B	41. C	49. D	57. B	65. D	73. B	81. D
2. C	10. C	18. C	26. B	34. B	42. C	50. C	58. C	66. A	74. C	82. A
3. D	11. D	19. C	27. C	35. C	43. B	51. A	59. A	67. D	75. C	83. B
4. C	12. B	20. C	28. A	36. C	44. B	52. D	60. D	68. C	76. C	84. C
5. C	13. D	21. D	29. C	37. B	45. C	53. D	61. A	69. C	77. C	85. B
6. D	14. D	22. A	30. D	38. D	46. D	54. C	62. D	70. D	78. C	86. A
7. A	15. D	23. A	31. C	39. D	47. D	55. C	63. C	71. A	79. A	87. B
8. B	16. C	24. C	32. B	40. C	48. A	56. D	64. C	72. D	80. B	

(2) Complete the following sentences using the words between brackets :

1. Carton	6. The sun	11. Nerves	16. Jerboa	21. Direct	26. Gravity
2. Chemical	7. Sound	12. Chemical energy	17. Teeth and tongue	22. Shadow	27. Decreases
3. Distance/time	8. Energy	13. Gravity	18. Oxygen	23. Reflect light	28. Unbalanced
4. Gills	9. Reaction time	14. Hearing sense	19. Lens	24. Oxygen	
5. Mirror	10. 5 km/h	15. Pollution	20. Structural	25. Electrical	

(3) Complete the following :

1. Brain
2. Bat – dolphin
3. Airbags – seatbelts
4. Decrease
5. Smell – movement
6. Sight
7. Increase
8. Carbon dioxide
9. Gills
10. Tapetum lucidum
11. sight
12. Kinetic
13. Electric – sound
14. Hearing – bats and dolphins
15. Kinetic
16. Hearing – echolocation
17. Distance – time
18. Nervous
19. Echolocation
20. Faster
21. Touching
22. Bats – dolphin
23. Increase
24. Distance – time
25. Kinetic
26. friction
27. Straight
28. Energy
29. Chemical – heat
30. Hearing
31. Reaction time
32. Brain
33. Transparent
34. Sun

(4) Put (√) or (X) :

1. (√)	9. (√)	17. (√)	25. (X)	33. (√)	41. (√)	49. (X)	57. (X)	65. (√)	73. (√)
2. (X)	10. (√)	18. (√)	26. (X)	34. (√)	42. (√)	50. (√)	58. (X)	66. (√)	74. (√)
3. (X)	11. (X)	19. (√)	27. (√)	35. (X)	43. (√)	51. (√)	59. (√)	67. (X)	75. (X)
4. (√)	12. (X)	20. (X)	28. (X)	36. (√)	44. (√)	52. (√)	60. (X)	68. (X)	76. (√)
5. (√)	13. (√)	21. (X)	29. (X)	37. (√)	45. (√)	53. (X)	61. (√)	69. (X)	77. (√)
6. (√)	14. (√)	22. (X)	30. (√)	38. (√)	46. (X)	54. (√)	62. (X)	70. (√)	
7. (√)	15. (√)	23. (√)	31. (X)	39. (X)	47. (√)	55. (√)	63. (X)	71. (X)	
8. (X)	16. (√)	24. (√)	32. (√)	40. (X)	48. (√)	56. (√)	64. (√)	72. (X)	

(5) Correct the underline

1. Inhalation	5. Brain	9. Downward	13. Kinetic	17. Sound
2. Hearing	6. Water lily	10. Humans	14. Friction	18. Kinetic
3. Light	7. Dots	11. Heat	15. Penguin	19. Pulling
4. Energy	8. Ears	12. Work	16. Unbalanced	20. Airbag

(6) Matching:

1

1- b 2- c 3- d 4- a

2

1- b 2- d 3- a

3

1- b 2- a 3- c

4

1- c 2- b 3- a

5

1- b 2- c 3- d

6

1- c 2- a 3- b

7

1- d 2- a 3- b

8

1- b 2- a 3- d 4- c

(7) TRY TO ANSWER:

1
1- Figure (a) 2- Figure (b)
2
1- apple – eyes – brain
3
1- digestive system – nervous system – respiratory system
4
1- Inhalation 2- Exhalation
5

- Opaque
- Transparent

(8) Problem

1

$$\text{Speed of runner} = \frac{\text{distance}}{\text{time}} = \frac{300}{30} = 10\ \text{m/s}$$

2

$$\text{Speed of truck} = \frac{\text{distance}}{\text{time}} = \frac{160}{2} = 80\ \text{km/h}$$

3

$$\text{Speed of bike} = \frac{\text{distance}}{\text{time}} = \frac{150}{5} = 3\ \text{m/s}$$

4

$$\text{Speed of car} = \frac{\text{distance}}{\text{time}} = \frac{100}{2} = 50\ \text{km/h}$$

5

$$\text{Speed of car (A)} = \frac{\text{distance}}{\text{time}} = \frac{100}{20} = 5\ \text{km/h}$$

$$\text{Speed of car (B)} = \frac{\text{distance}}{\text{time}} = \frac{300}{20} = 15\ \text{km/h}$$

So car (B) is faster than car (A)



Final Revision

Mr. Ahmed Elbasha

✸(1) Choose the right answer:

1. Bat use their .... to get information about surrounding in the dark.

a. nose. b. tongue. c. eyes. d. ears.

2. Press the pedal of a car sends more .... into engine.

a. air. b. water. c. milk. d. fuel.

3. Opaque material ....

a. allows light to pass through.

b. absorbs some of light that fall on it only.

c. bounces off some of light that fall on it only.

d. absorbs some of light that fall on it and bounces of the other.

4. Moving faster or slower means that there is a change in the .... of an object.

a. direction. b. speed.

c. color. d. temperature.

5. All the following are examples of acting forces except, ...

a. kicking a ball. b. pressing a button.

c. listening to music. d. lifting a bag.

6. In penguin's body, the insulating layer of fat and thick downy feathers trap .... against the skin.

a. cold air. b. cold water.

c. warm water. d. warm air.

7. The organism that has no eyes in the following species, is....................

a. tarsier monkey. b. golden frog.

c. barbary fig. d. bull shark.

8. All the following ways can be used to communicate between people except.................

a. reading. b. writing.

c. speaking. d. flying.

9. A ball at the top of a hill stores....................energy.

a. sound. b. light. c. potential. d. chemical.

10. Parachutes are used in the shockwave truck to ....

a. increase its speed.
b. keep its speed as it is.
c. decrease its speed.
d. changing its direction.

11. A firefly is not a bird, but it is a type of ....

a. amphibians.
b. lizard.
c. beetles.
d. reptiles.

12. To increase the speed of moving object, you must give it more .... energy.

a. light.
b. potential.
c. sound.
d. kinetic.

13. If a desert lizard is transferred into a cool environment, it will stop ....

a. looking for a shade area.
b. looking for a water to drink.
c. breathing.
d. eating.

14. Most cars around us use .... as a fuel.

a. gasoline.
b. sunlight.
c. batteries.
d. water.

15. Collision usually produce ....

a. solar energy.
b. sound energy.
c. gravitational potential energy.
d. chemical potential energy

16. When light hits an object, a shadow of this object is formed because ....

a. light can pass through the object.
b. light cannot pass through the object.
c. this object reflects light.
d. this object is a transparent object.

17. In the tug-of-war game, when two teams are pulling a rope, and the rope doesn't move toward any team, this mean that ....

a. equal forces are being applied on the rope in the same direction.
b. equal forces are being applied on the rope in the opposite direction.
c. unequal forces are being applied on the rope in the same direction.
d. unequal forces are being applied on the rope in the opposite direction.

18. There is a .... inside your eye, that redirects the entered light rays.

a. black paper.
b. white paper.
c. lens.
d. mirror.

19. A very big truck needs .... to move.

a. very small engine.
b. small engine.
c. very big engine.
d. no engine.

20. Bull shark can live in ....

a. fresh water only.
b. salt water only.
c. seas, river, and mud.
d. rivers, seas, and oceans.

21. In the tug-of-war game, two teams ....

a. pull the rope in the same direction.
b. pull the rope in the opposite direction.
c. push the rope in the same direction.
d. push the rope in the opposite direction.

22. If you catch a piece of ice in your hand, you will begin to lose feeling in your finger after a few ....

a. minutes.
b. hours.
c. days.
d. weeks.

23. When a Jerboa hears the sound of a moving snake, it ....

a. remains standing in its place.
b. jumps to hunt the snake.
c. makes sounds to frighten the snake.
d. jumps quickly to run away from the snake.

24. If there is nothing to stop the movement of an object, this object will ....

a. stay in motion.
b. stop after few hours.
c. stop after few minutes.
d. stop after few second.

25. The speed of normal truck is more than that of ....

a. a jet airplane only.
b. a jet airplane and a rocket.
c. a rocket and bicycle.
d. a bicycle only.

26. When your eyes see a red traffic light, it sends a signal to you to ....

a. increase your speed.
b. decreases your speed.
c. keep your speed as it is.
d. stop.

27. All of the following examples represent kinetic energy, except ....

a. light waves moving through the air.
b. sound waves moving through the air.
c. stores chemical energy in a car battery.
d. water particles movement during heating.

28. The part of the car that release the stored potential energy in gasoline, is the ....

a. radio.
b. engine.
c. tire.
d. window.

29. When light rays hit an object, all the following sentences are correct, except ....

a. some of those rays are absorbed by the object.
b. some of those rays are bounced off the object.
c. some of those rays may go through the object.
d. some of those rays reflect to our ears causing hearing.

30. If the eye lens is made up of an opaque material, then this eye ....

a. can see the near object only.
b. can see the far object only.
c. can see both the far and the near objects.
d. cannot see any objects around it.

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Whatsapp : 01003494547

31. What force do you use to kick a ball with your leg? ....

a. pull. b. push.

c. sound. d. light.

32. Humans and Cars are similar in ....

a. not able to produce sound energy.

b. not able to produce kinetic energy.

c. similar in obtaining energy to move.

d. similar in adaptation to live and survive.

33. Reading and Writing are common types of communication in .... world.

a. Human. b. Animals.

c. Plants. d. Birds.

34. Seatbelts work when the car ....

a. decrease its speed gradually. b. increase its speed gradually.

c. suddenly stops.

d. stops gradually.

35. Sense organs collect information and send it to .... for processing and understanding.

a. hands. b. legs.

c. brain. d. stomach.

36. By increasing the number of fire extinguishers fixed to a cart, ...

a. its speed increases. b. its speed decreases.

c. its speed doesn't change. d. its speed become zero.

37. All of the following are transparent objects, except ....

a. glass. b. water.

c. paper. d. air.

38. If we press the gas pedal while the car is moving on a road at a speed= 70 Km/hr. so, the speed of the car may reach .... Km/hr.

a. 20. b. 40. c. 60. d. 80.

39. During crossing a street, you had to stop for a moment to avoid the danger of being hit, the system that alerted you was the .... system.

a. respiratory. b. digestive. c. urinary. d. nervous.

40. .... is considered as a behavioral adaptation in the panther chameleon.

a. puffing up its body during danger. b. each eye can move independently.

c. V-shaped feet. d. long sticky tongue.

41. In penguin's feet, ... weave around each other.

a. warm blood vessels and cold blood vessels.

b. warm blood vessels and its toes.

c. cold blood vessels and its toes.

d. cold blood vessels and thick downy feathers.

42. All types of energy can be classified into two main groups which are ....

a. light energy and sound energy.
b. chemical energy.
c. potential energy and kinetic energy.
d. magnetic energy.

43. Push or pull actions are considered as types of ....

a. force.
b. device.
c. energy.
d. adaptation.

44. When a snake makes a noise, the sensory receptors found in jerboa's .... send a warming message to the brain.

a. ears.
b. nose.
c. feet.
d. teeth.

45. A ball move away from the foot of the football player by the affected of ....

a. pushing force only.
b. pulling force only.
c. pushing and pulling forces.
d. sound energy.

46. When a car stops suddenly, the passenger moves ....

a. backward. b. forward. c. upward. d. downward.

47. The stored energy in a battery of flashlight changes into ...., when it is turned on.

a. chemical energy.
b. sound energy.
c. light energy.
d. potential energy.

48. Humans cannot live without ....to obtain the needed energy for their activities.

a. reading a book.
b. driving a car.
c. watching television.
d. eating food.

49. The friction force between ....and the road causes a decrease in the speed of the car.

a. car tires. b. car horn. c. gas pedal. d. car door.

50. The presence of an insulating layer of ...., keep the penguin's body warm.

a. protein and thick downy feathers.
b. fat and thin downy feathers.
c. fat and thick downy feathers.
d. protein and thin downy feathers.

51. When a panther chameleon stands within leaves of trees, the color of its scale changes into .... Color.

a. white. b. green.

c. blue. d. black.

52. All of the following are forms of codes, except ....

a. thump up and thump down. b. expression of faces.

c. writing. d. swimming.

53. When the object collides with each other, ... is transferred between them.

a. time. b. distance.

c. energy. d. nothing.

54. In Morse code, long flashes can be used instead of ....

a. dots only. b. dashes only.

c. both dots and dashes. d. neither dots nor dashes.

55. Umbrella-shaped tree are ....

a. mangrove tree and acacia tree. b. mangrove tree and kapok tree.

c. acacia tree and kapok tree. d. barbary fig and water lilies.

56. If the angle of inclination of the road increases, the kinetic energy of an object moving downward on it, will ....

a. decrease. b. increase.

c. remain as it is. d. be destroyed.

57. Fennec foxes and arctic foxes live in burrows, this belongs to ....

a. only structural. b. only behavioral.

c. both structural and behavioral. d. neither structural nor behavioral.

58. To describe the color of your school bag to your friend, you should use the sense of ....

a. sight. b. smell. c. taste. d. touch.

59. By increasing the number of fire extinguishers fixed to a cart, ...

a. its speed increases. b. its speed decreases.

c. its speed doesn't change. d. its speed becomes zero.

60. A speed is a measurement of how .... something is moving.

a. long. b. tall. c. fast. d. heavy.

61. A very big truck needs .... to move.

a. very small engine. b. small engine.

c. very big engine. d. no engine.

62. Camouflage means that the animal ....

a. can be seen easily among its surrounding.

b. is hard to be seen among its surrounding.

c. is easily to be seen by its prey.

d. can be seen easily by its predators.

63. Cheetah's nose has large openings, which help it ....

a. breathe a lot of air.
b. breathe a little amount of air.
c. hide from its predator.
d. hide from its prey.

64. The five senses of humans include ....

a. sight, hearing, smell, touch, and movement.

b. sight, movement, taste, touch, and smell.

c. taste, touch, movement, hearing, and smell.

d. sight, hearing, smell, taste, and touch.

65. The structural adaptation that helps the fishing cat to catch a prey at night, is that its ability ....

a. to feel the heat of prey's body.
b. to hide inside the forest.
c. to digest its prey easily.
d. of excellent night vision.

66. The starred agama keeps cool during a hot sunny day in desert by ....

a. eating green vegetables.
b. drinking more water.
c. secreting more sweat.
d. finding a shade area.

67. A snake has the ability to catch preys at night because ....

a. it can smell them.
b. it can hear their heartbeats.
c. it can see them clearly at night.
d. it can sense the heat of their warm bodies.

68. Electric energy operate the following devices, except ....

a. radio.
b. candle.
c. cellphone.
d. television.

69. The system responsible for moving your hand away from danger, such as touching a hot cup of tea, is the .... system.

a. digestive
b. respiratory.
c. nervous.
d. stomach.

70. When you move something toward you, this represents ....

a. pushing force.
b. light energy.
c. pulling force.
d. sound energy.

71. Cheetah has a .... heart.

a. large weak. b. small weak.

c. large powerful. d. small powerful.

72. Ancient .... created hieroglyphs in central America that included 800 different signs.

a. Egyptians. b. Chinese.

c. Mayans. d. Greeks.

73. The scout honeybee makes .... round dance if the flower is very close.

a. 1 b. 2

c. 3 d. 4

74. Fennec foxes and arctic foxes lives in burrow this belongs to ....

a. only structural. b. only behavioral.

c. both structural and behavioral. d. neither structure nor behavioral.

75. The presence of thick fur is physical adaptation in ....

a. fennec fox. b. agama lizard.

c. forest bear. d. polar bear.

76. To describe the bag color of your friend, you should use the sense of ....

a. taste. b. sight.

c. touch. d. smell.

77. Writing and reading are common types of communication in .... world.

a. reptiles. b. humans.

c. plants. d. birds.

78. Bees can communicate with each other by ....

a. Morse code. b. dancing.

c. flash lights. d. echolocation.

79. An electric fan produces .... energy.

a. chemical. b. electrical.

c. mechanical. d. thermal.

80. An object stays moving with its same speed, when ....

a. its kinetic energy decreases. b. its potential energy increases.

c. no another force stops it. d. another object collides with it.

81. All the following are organs in the digestive system except ....

a. mouth. b. nose. c. stomach. d. esophagus.

82. When the cheetah increases its speed, its kinetic energy ....

a. decreases. b. become zero.

c. increases. d. doesn't change.

83. The acacia tree warning the other nearby acacia trees from animals by sending ....

a. a watery message in the air. b. a watery message in the water.

c. a smelly message in the air. d. a smelly message in the water.

84. If you are in your room, you can tell what kind of food is being prepared in the kitchen by using your sense of ....

a. taste b. hearing c. touch d. smell

85. All of the following are nocturnal animals, except ....

a. fishing cats b. cactus c. tarsier monkey d. bats

86. Writing and reading are common types of communication in .... world.

a. reptiles b. plants c. humans d. birds

87. Which of the following communications uses the sense of hearing only?

a. Flashing lights of fireflies b. Traffic lights

c. fire d. Echolocation in bats

88. Bees can communicate other by ....

a. morse code b. dancing c. flash lights d. echolocation

89. While operating the electric oven to cook food, it uses .... energy.

a. electric b. sound c. chemical d. heat

90. In gas oven .... Energy changes into .... energy.

a. chemical, sound b. heat, electric c. chemical, heat d. chemical, light

91. Bull sharks can live in ....

a. fresh water only b. salt water only

c. seas, rivers and mud d. rivers, seas, and oceans

92. The acacia tree warning the other nearby acacia trees from animals by sending ....

a. pizza's odor b. perfume's scent c. smelly message in the air d. sings in air

93. The undigested materials of the food pass from the small intestine into ....

a. liver b. esophagus c. stomach d. large intestine

94. Cutting down forests and eroding soil are from the environmental changes that happen due to ....

a. Human activities b. natural changes

c. environmental changes d. no correct answer

95. The car's .... helps in burning the fuel, and converting the potential energy into kinetic energy.

a. tires b. car lamps c. safety belt d. engine

96. The .... extends from the brain down through backbone.

a. nerves b. spinal cord c. stomach d. eye

97. If you are in your room, you can tell what kind of food is being prepared in the kitchen by using your sense of ....

a. taste b. hearing

c. touch d. smell

98. In gas oven .... energy changes into .... energy.

a. chemical, sound b. heat, electric

c. chemical, heat d. chemical, light

99. The eyes of panther chameleon are belong to .... adaptation

a. structural b. behavioral

c. behavioral and structural d. no correct answer

100. Communication and sending information can be carried out through ....

a. drums b. signs c. light flashes d. all the pervious answers

101. When light falls on rough surface, it is ....

a. absorbed b. diffused c. reflected d. refracted

102. The bees use .... by doing some movements to tell other bees the direction and distance to the food resources.

a. light b. codes c. speaking d. movements

103. The Egyptians invented papyrus which is a type of paper made from the .... plants.

a. Bamboo b. mulberry c. cactus d. reed

104. Which of the following doesn't form a shadow when light falls on it?

a. wood b. Tree c. cardboard c. clear glass

105. Mirror has a .... surface

a. shiny b. smooth c. rough d. A & B

106. .... is a type of language created by Ancient Egyptians in the year 3000 BCE.

a. Hieroglyphic b. Babylonian

c. Mayan d. Chinese

107. The .... medium that allows light to pass through it.

a. Opaque b. Dark c. Transparent d. All the pervious answers

108. .... processes, interprets and understands information.

a. Brain
b. Spinal cord
c. Nerves
d. Body parts

109. The digestive system of human is similar to digestive system of cow ....

a. they start with mouth and end with anus
b. They have one stomach
c. they eat the same food
d. They have the same of teeth

110. An animal that can escape from enemies because of the length of its hind leg.

a. Arctic fox
b. jerboa
c. Foxes
d. Snakes

111. The ability of fireflies to emit flashes of light is a kind of ....

a. Camouflage
b. Behavioral adaptation
c. structural adaptation
d. Hereditary

112. Waggle dance of honeybee indicates the direction of ....

a. enemy
b. mating
c. food and water sources
d. all the previous answers

113. All the following are examples of codes except ....

a. face expressions
b. hand waves
c. traffic light
d. watching TV

114. Ant groups communicate through a .... sense and this considered a .... type of adaptation.

a. Smell, behavioral
b. Taste, behavioral
c. Taste , Structural
d. Smell, Structural

115. Which animal has sensitive and shine eyes in the dark?

a. Cat
b. Amphibian
c. Monkey
d. Snake

116. The living organism that has no eyes in the following species, is ....

a. Tarsier monkey
b. Owl
c. Fishing cat
d. Acacia tree

117. Sound and light are two types of energy where, ...

a. The sound energy can be seen, while light energy can't be seen.

b. the light energy can't be seen and sound energy can't be seen.

c. Both can be seen.

d. Sound energy can't be seen, while light can be seen.

118. Sensory organs like nose, ears and skin receive external information and convert it into ....

a. Nutrients
b. Nerves signals
c. Energy
d. Light

119. The root of palm tree helps it to ....

a. Resist the winds
b. Reach to the underground water
c. Fix the plant in soil
d. All the previous answers

120. Most predator birds like hawks possess tools such as .... to tear the meat of their prey which is a .... adaptation.

a. sharp teeth, structural
b. sharp beaks, behavioral
c. sharp beaks, structural
d. broad beaks, behavioral

121. When Light falls on a rough surface, it is ....

a. Reflected
b. Diffused (Scattered.
c. Absorbed
d. Transmitted

122. Which of the following traits that help cactus and barbary fig adapt in extreme habitats?

a. They fleshy stem to store water.
b. They have waxy layer to reduce water lose.
c. they have spines to prevent animals to eat them.
d. They have long roots to look for underground water.

123. The smooth, flat and shiny surface of mirror .... light waves energy.

a. absorbs
b. refracts
c. reflects
d. transmits

124. Rami stopped his bike because he heard a car speeding towards. Which system received the external signal of hearing that enabled rami to respond by stopping his bike?

a. Muscular system
b. Skeletal system
c. Digestive system
d. Nervous system

✹(2) Complete the following :

1. .... is a big nerve runs inside the backbone of the human body.
2. .... represents the main control center and is responsible for processing information.
3. The reaction time of visual respond is .... than auditory respond.
4. when you push a table on the floor, the.................... transfer from your body to the table.
5. echolocation property is used by.................... and .... animals to locate their preys.
6. humans, amphibians and reptiles have .... to breath oxygen gas in the air.
7. among safety equipment which are used during collision of cars .... and ....
8. among animals that can live in polar environment are .... and ....
9. if the kinetic energy of a moving body decreases, its speed will ....
10. ants use their sense of .... to communicate with each other, while bees use .... by doing a special dances to communicate with each other.
11. the speed of a moving object on a smooth ramp is .... than that of the same object that moves on a rough ramp.
12. you can arrive your house using a bicycle in a time .... than the time taken when you use a car.
13. during inhalation, air travels down from your throat to your lungs through ....
14. if the driver takes his foot off the gas pedal, the speed of the car will .... gradually until it stops due to the .... between the car tires and the road.
15. writing a code that uses the sense of .... to communicate.
16. when a skater begins to skate, his stored .... energy changes into .... energy.
17. if a bird flies up from the ground to a high tree, so its potential energy will ....
18. all living organisms, breathe in oxygen gas, and gives out .... as a waste product.
19. chemical energy is found in many things such as .... inside a car's engine, in .... for our bodies and in .... of a flashlight.

20. as the pollution rate of water in ponds and air increases, the number of amphibians ....

21. the .... is the organ that sends information to the brain when you smell the scent of a nice perfume.

22. when a moving car hits a tree, a part of .... energy of the car changes into a .... energy which you hear it.

23. humans use lungs to breath, while fish use ....

24. some nocturnal animals have a mirror-like membrane on the back of their eyes called ....

25. Writing is a code that uses sense of .... to read.

26. The .... energy depends on the speed of a moving object.

27. In the electric bell, ... energy changes into .... energy.

28. The lens in your eye .... the light in a point, while the tapetum lucidum membrane in cat's eyes .... the light.

29. On hearing an alarm ring, the sensory receptors that are found in the .... send a message through a network of nerves to the .... which determines what to do to avoid danger.

30. Among the objects which give out their own light are .... and .... while .... and .... are objects that bounce off light.

31. Echolocation is a type of communication that depends on the sense of .... and it used by some animals such as .... and ....

32. The bee dances in a figure-eight pattern while vibrating its .... and the other bees read the…………… of the dancer and then fly off to the specific location.

33. when two cars move on the same road, car(A) moves at speed equals 10m/sec., and car(B) moves at speed equals 20 m/sec., this means that car .... moves longer distance than car .... in the same time.

34. Most of .... energy in the Newton's cradle is transferred from the first ball to the rest of balls.

35. To increase the .... energy of any moving object we must increase its speed.

36. When a skater begins to skate, his stored .... energy changes into .... energy.

37. if you move a bag placed on a table to the floor, its potential energy will ....

38. dolphins have sharp sense of .... which they use to locate living organisms under water through the .... property.

39. to measure the speed of a moving bicycle we need to divide the .... it travels by the .... it takes to travel this trip.

40. when you throw a ball in the air, it starts to fall down again towards the ground due to the effect of pulling force of ....

41. hopping of the Egyptian Jerboa in zigzag patterns to stay away from the snakes attacking it, is considered as a .... adaptation.

42. animals can blend in with their environment to hide from their .... and preys through .... property.

43. A moving object continues in .... until something .... it.

44. In the solar vehicle, the light energy of the sun is converted into .... energy that allows the car to move.

45. when the lens in your eyes can't focus the light properly this causes .... vision.

46. The eyes of .... seem to glow in the dark, while the eyes of .... can see in two opposite directions at the same time.

47. Forest bears have .... or .... colored fur, while polar bears have .... colored fur.

48. If an object is placed at a height of the Earth's surface, it will store ....

49. In tug-of-war game, the rope moves toward the group which has pulling force .... than the other group.

50. The system which is responsible for moving your hand away when you touch a cup of hot water is the .... system.

51. Bats and special cane of blind people are similar in using .... property to locate objects.

52. The speed of a moving object on a smooth ramp is .... Than that of the same object that moves on a rough ramp.

53. a human can feel the hotness of a cup of coffee by using the sense of ....

54. we can say that the moving objects is fast when it covers along .... In a short period of ....

55. when an apple falls from a tree its .... energy will decrease. while, when a rocket goes up its potential energy will ....
56. The thick fur coat helps .... fox hunts in deep snow, while the blood movement in the feet of .... keep their toes from freezing.
57. Echolocation property is used by .... and .... animals to locate their preys.
58. the fishing cat can hunt at night depending on the sense of .... , while snake can hunt at night depending on its ability to sense .... which comes out from its prey's body.
59. As the speed of cars increases, the damage that occurs during collisions ....
60. The speed of two objects are equal, if they cover the same .... at the same amount of ....
61. The sound waves that picked up by the cane of a blind person is turned into .... that the person can feel them with his ....
62. If you push a small ball and a big ball with the same force, a small ball moves a distance .... than the big ball.
63. Any object will move, if it has .... energy.
64. The penguin's body can keep warm air against its skin through an insulating layer of .... and thick downy ....
65. The owl uses the senses of .... and .... in hunting preys at night.
66. The speed moving ball on the ground decreases gradually until it stops due to the effect of .... force.
67. Light travels in .... line.
68. When objects collide with each other, ... is transferred between them.
69. A penguin can stand around on ice all day due to the weaving of…………… around each other in its feet.
70. In gas even, ... energy changes into .... energy.
71. The response of the eye nerves is .... than that of the ear nerves.
72. You can arrive your house using a bicycle in a time .... than the time taken when you use a car.

73. A human can pay attention to an alarm bell in case of danger through the sense of ....

74. The .... is the organ that sends information to the brain when you smell the scent of a nice perfume.

75. if a truck moves with a high speed, so it has more .... energy.

76. When the jerboa is in danger, it starts to run away, this action occurs in a very short time called ....

77. .... objects reflect most of light rays like mirror and aluminium foil.

78. .... is the central control system in the body

79. Animal that eats grass like .... has flat teeth.

80. .... objects allow light rays to pass through them.

81. .... is the main source of light.

✸(3) Put (√) or (X) :

1. Ear collects sound waves then nerves send signals to brain to translates it. (   )
2. Wood is an opaque material (   )
3. morse code consists of long and short beeps (   )
4. when balanced force is applied on a body at rest, it moves. (   )
5. The responsible organ getting oxygen from the air is brain. (   )
6. The sandy-color fur of fennec fox is an example of behavioral adaptation. (   )
7. Acacia leaves are protected from eaten by animals as they have spines. (   )
8. Stomach connects esophagus with large intestine. (   )
9. Both human and fish need food and oxygen to get energy. (   )
10. When ecosystem is rapid changed, many organisms may die. (   )
11. The moon is not considered as a light source (   )
12. the sense of hearing of dolphins is stronger than that of human. (   )
13. you need energy to push a car forward or backward. (   )
14. the rotation of Earth around the Sun is easy to be seen. (   )
15. eyes are one of the five senses, on which humans depend to see the surroundings. (   )
16. speaking is the only way of communication between people. (   )
17. sensory receptors in finger can distinguish between smooth and rough objects. (   )
18. hitting a tennis ball needs a pulling force. (   )
19. the spinal cord delivers messages between the brain and the feet. (   )
20. fireflies communicate with each other through songs. (   )
21. Expression on faces are codes that can help people predict our feelings. (   )
22. Cat's eyes look like small lighted lamps at night. (   )
23. kapok tree has hand-shaped leaves. (   )
24. humpback whales produce only one type of songs. (   )
25. the sense of hearing of dolphins is stronger than that of human. (   )
26. you need energy to make a force to move a chair from one place to another. (   )

27. when the air is released backward from the fire extinguishers fixed to a cart, the cart moves backward. ( )

28. light waves is a form of potential energy. ( )

29. penguins have vessels in their feet that help them survive in polar regions. ( )

30. the bus that covers 60 kilometers in 1 hour has a speed = 60 m/sec. ( )

31. you can see a green ball inside a transparent glass box. ( )

32. Fireflies make light flashes by using their legs. ( )

33. digestion process begins in stomach with the help of salvia. ( )

34. a dog uses its sense of smell and eyesight to identify its owner. ( )

35. Exposing to air rich in dust harms the respiratory system. ( )

36. If two objects travel for equal amount of time, the object that travels a greater distance have a slower speed. ( )

37. Both human and fish need food and oxygen to get energy. ( )

38. The motion of an object is affected by a friction force. ( )

39. Some animals prefer hunting during the night than hunting during the day. ( )

40. The object that travels down a ramp is affected by the force of gravity. ( )

41. Eyes are one of the five senses, on which humans and animals depend on to see the surroundings. ( )

42. All electric devices are operated by using light energy. ( )

43. Animals communicate with each other by using different senses. ( )

44. Seatbelt is one of the safety equipment in cars. ( )

45. As human needs clean water to drink, fish needs clean air to breathe. ( )

46. mouth, nose, esophagus and stomach are from the organ of the digestive system. ( )

47. if a person moves a table through a distance so, there is a work done. ( )

48. humans can restore ecosystem as well as they can harm them. ( )

49. a rocket can travel faster than a car. ( )

50. adaptation to store water, is an important character for plants that live in dry desert environment. ( )

51. the angle of the incline affects the speed of an object moving on it. ( )

52. we use our sense of smell to identify the color of a flower. ( )

53. most nocturnal animals have huge eyes to gather and reflect any light available. ( )

54. lifting a book upward needs more energy than pushing a truck. ( )

55. The human body gets oxygen gas from food. ( )

56. Panther chameleon and agama lizard can use one of their eyes for searching for food, and other eye to lookout for danger. ( )

57. Radio is operated by sound energy, and produces electric energy. ( )

58. Although snake has a weak night vision, but it can hunt at night. ( )

59. The Egyptian jerboa can jump for long distance depending on its long hind legs. ( )

60. the small size of cheetah's heart help it in running so fast. ( )

61. Respiratory problems like lung damage and asthma, occur when water pollution is high over a long period of time. ( )

62. A skin helps human distinguishes between the taste of different types of food through the sense of touch. ( )

63. By changing the height of the ramp, the speed of a ball moves on its changes. ( )

64. Kinetic energy cannot be transformed into potential energy. ( )

65. Unbalanced forces keep an object in its place without moving. ( )

66. Speaking is the only way of communication between people. ( )

67. hitting a tennis ball needs a pulling force. ( )

68. Morse code may use long , short flashes of light instead of long and short beeps. ( )

69. a jerboa has large ears which help in sensing the snake. ( )

70. the bus that covers 60kilometers in 1hour has a speed= 60 km/hr. ( )

71. kinetic energy, muscle of skater and his nervous system are working together to help him jump high into the air. ( )

72. pollution is one of the most dangerous problems, that affects all living organisms. ( )

73. we cannot create a new form of energy, and also we cannot destroy an existed form of energy. ( )

74. The sense of smell is super in all animals. ( )

75. Morse Code is a communication system that is used by firefly. ( )

76. Dogs eat meat that is very difficult to be digested compared with grass. ( )

77. If two objects cover the same distance in same time so, they have the same speed. ( )

78. Living organisms can adapt their environmental conditions through structural adaptation and behavioral adaptation. ( )

79. The electric lamp gives out two types of energies which are light energy and thermal energy. ( )

80. The body senses and systems work separately when animals run away from their enemies.

81. All animals are similar in shape and structure of digestive system. ( )

82. Force is necessary to move or stop an object. ( )

83. Bull shark can live in salt water only. ( )

84. transformation of potential energy into kinetic energy during ice-skating, proves that the energy can be created but can't be destroyed. ( )

85. The food passes through the large intestine before it goes into the small intestine. ( )

86. The sense of hearing of dolphins is stronger than that of human. ( )

87. The large ear of a jerboa is an example of structural adaptation. ( )

88. when two heavy and fast cars are in an opposite direction, collide together they produce very small amount of damage. ( )

89. You can change kinetic energy into stored potential energy when you compress a toy spring. ( )

90. if you want an object to move slower, you must give it more kinetic energy. ( )

91. Animals that live in hot areas are characterized by thick fur ( )

92. Natural changes can lead animals and plants to lose their habitats ( )

93. The animals that cannot adapt to environmental change, the will extinct ( )

94. Pollution is one of the most dangerous problems, that affect all living organisms. ( )

95. The fireflies communicate by lighting ( )

96. The person who checkup and test either the eye lens is focusing well or not, is the optometrist. ( )

97. Humpback whales change their songs along the seasons. ( )

98. Energy is the ability to do work. ( )

99. Moon is a source of light. ( )

100. penguin feet freeze when it walks on ice ( )

101. Camouflage is a type of adaptation that helps animals hide from predators ( )

102. Mirror is an example of smooth surface. ( )

103. Dogs have a long digestive system. ( )

104. Cows have sharp teeth ( )

105. Cows have many stomachs as they eat grass which is hardly digested ( )

106. The digestion process is an important process that provide us with energy from nutrients.

107. Air enters lungs during the inhalation process. ( )

108. Alveoli exist in the trachea ( )

109. Inhaled air contains a large amount of carbon dioxide ( )

110. There is 1 type of adaptation ( )

111. Wide leaves of water lily is a behavioral adaptation ( )

112. Bull shark's countershading phenomenon is a structural adaptation ( )

113. Cutting down trees eroding soils are from the environment changes happening die to human activities. ( )

114. Animals that live in polar habitats have thick fur and fatty layers under skin. ( )

115. The time of auditory stimulus is faster than the visual stimulus. ( )

116. The sensory organs responsible for receiving the sound of noise is the mouth. ( )

117. The sense organs responsible for receiving smell of perfume is the nose ( )

118. Animals that live in hot areas are characterized by thick fur. ( )

119. Humpback whales change their songs along the seasons. ( )

120. Energy is the ability to do work. ( )

121. Sun is the main source of light. ( )

122. Morse code consists of long and short bees. ( )

123. The nocturnal animals have super sense help them to hunt at night. ( )

124. The digestive system is completely similar in all animals even if the type of food is different ( )

125. The parts of the nervous system work together to identify the environment and interpret information. ( )

126. Wood is an opaque material ( )

127. when balanced force is applied on a body at rest, it moves. ( )

✹(4) Correct the underline

1	Air enters the two lungs during **exhalation** process.	(……………………)
2	**Light** is a code uses symbol and letters to transfer information.	(……………………)
3	A cell phone is a part of **engineering** system.	(……………………)
4	Bats use echolocation as they have super **sight** sense.	(……………………)
5	**Kapok** trees produce a poison to prevent animals from eating their leaves.	(……………………)
6	The auditory respond is **faster** than the visual respond.	(……………………)
7	**Light** is a pattern has meaning.	(……………………)
8	**Cow** has short and simple digestive system.	(……………………)
9	The eyes use **sound** energy to see.	(……………………)
10	**Speed** doesn't destroy, but it can only change from one form to another.	(……………………)
11	Air enters the two lungs during **exhalation** process.	(……………………)
12	Bees communicate to find **carbon dioxide** and water sources.	(……………………)
13	The papyrus is made from **bamboo and mulberry plants** that grows in the Nile River.	(……………………)
14	The **spinal cord** is responsible for processing information coming through eyes.	(……………………)
15	under the effect of **pushing** force of gravity, anything falls down to the ground.	(……………………)
16	**Acacia tree** floats on the surface of water.	(……………………)

17	Fireflies produce a **physical** reaction inside their bodies that allows them to light up .	(……………………)
18	Fish breathe through **moist skin**, while frog breathe through **gills** and skin.	(……………………)
19	A ball's **potential** energy increases as it slides down on inclined surface.	(……………………)
20	morse code uses dashes and **questions marks**, that there represent different letters of alphabet.	(……………………)
21	The **spinal cord** is responsible for processing information coming through eyes.	(……………………)
22	**Speed** doesn't destroy, but it can only change from one form to another.	(……………………)
23	**Chemical** energy is the only form of energy can be seen.	(……………………)
24	Robot use **light** energy to work.	(……………………)
25	Scientists classifies energy into **four** categories.	(……………………)
26	By increasing the number of fire extinguisher, the speed will **decrease**.	(……………………)
27	To slow down speed of a moving object, we have to **increase** the applied force acting on it.	(……………………)
28	when you hear the fire alarm, your **eyes** send a signal to the brain.	(……………………)
29	the dancing bee moves in figure- **seven** pattern while vibrating its wings.	(……………………)
30	During inhalation diaphragm moves **upwards**.	(……………………)
31	Humpback whales have **similar** sounds according to the season.	(……………………)
32	Different language have **similar** codes.	(……………………)
33	A cell phone is a device that is used in communication between **animals**.	(……………………)

34	**Sound** energy is used in cooking food.	(........................)
35	your **potential** energy is transferred from your foot to a ball when you kick it.	(........................)
36	the ability to do **force** or cause a change is known as energy.	(........................)
37	we cannot see all forms of energy, except **sound** energy.	(........................)
38	as the object moves faster, its **potential** energy increases.	(........................)
39	if you push a pencil upward, it stops at a certain height then falls down due to the effect of **pushing** force of gravity.	(........................)
40	**Gravity** force slows down the moving car when the tires touch the ground.	(........................)
41	when you jump up, the force of **friction** pulls you back to the ground.	(........................)
42	moving objects stop when a force of the same amount is applied on it in the **same** direction.	(........................)
43	Balanced force is a force when two **unequal** forces acting on the object.	(........................)
44	**Agama lizard** has thick feathers and fat layer.	(........................)
45	if the car runs out of fuel, its speed **increases**.	(........................)
46	Chameleon depends on its **eyes** to hold branches of trees.	(........................)
47	Agama lizards live in **polar**	(........................)

✹(5) Match :

1

A	B
1.Sound energy	a. it changes into another energy that can be stored inside the human body.
2.Light energy	b. when it reaches our ears, it causes hearing.
3.Thermal energy	c.it changes into electrical energy in flashlight.
4. Stored chemical energy in food.	d. when it reaches the nose, it causes smelling.
5. Stored chemical energy in a battery	e. when it reaches our eyes, it causes vision.
	f. it is produced from electric heater.

1- **2-** **3-** **4-** **5-**

2

A	B
1.friction force	a. are the forces that act on any object to make it moves.
2. balanced forces	b. is the force that act in the opposite direction of the object's movement to stop it.
3. unbalanced forces	c. is the force that act in the same direction of the object's movement to stop it.
	d. are the force that act on any object that doesn't move.

1- **2-** **3-**

3

A	B
1.snake	a. has strong wings, that help it to fly.
2.fishing cat	b. can feel the warm of prey body at night.
3.human	c. has night vision better than snake and lower than fishing cat.
	d. has a mirror-like membrane on the back of its eye.

1- **2-** **3-**

4

A	B
1. bats	a. make a special dance to communicate with each other.
2. bees	b. using echolocation during flying
3. blind person's cane	c. its vibrations tell the blind person to the directions.

1- **2-** **3-**

5

A	B
1. Fireflies	a. depends on the sense of smell in their communication.
2. Whales	b. depends on the sense of hearing in their communication
3. Ants	c. depends on the sense of sight in their communication

1- **2-** **3-**

6

A	B
1. Water	a. it is an opaque material, that reflects light in different directions.
2. Glass	b. it is a transparent material is used in making doors.
3. Wood	c. it is a transparent material that used in cooking and watering plants

1- **2-** **3-**

7

A	B
1. They created a hieroglyphic writing	a. energy
2. its eyes shine at dark	b. Egyptians
3. the amount of energy needed to move an object.	c. cat
4. The ability to do work.	d. work

1- **2-** **3-** **4-**

8

A	B
1.Normal engine	a. is used in stopping both of the shockwave truck and rockets.
2. Jet engine	b. is used in moving a normal truck.
3. Parachute	c. is used to stop a normal truck.
	d. is used in moving the shockwave truck

1- **2-** **3-**

Model Answer

(1) Choose the right answer:

1. D
2. D
3. D
4. B
5. C
6. D
7. C
8. D
9. C
10. C
11. C
12. D
13. A
14. A
15. B
16. B
17. B
18. C
19. C
20. D
21. B
22. A
23. D
24. A
25. D
26. D
27. C
28. B
29. D
30. D
31. B
32. C
33. A
34. C
35. C
36. A
37. C
38. D
39. D
40. A
41. A
42. C
43. A
44. A
45. A
46. B
47. C
48. D
49. A
50. C
51. B
52. D
53. C
54. B
55. C
56. B
57. B
58. A
59. A
60. C
61. C
62. B
63. A
64. D
65. D
66. D
67. D
68. B
69. C
70. C
71. C
72. C
73. A
74. B
75. D
76. B
77. B
78. B
79. C
80. C
81. B
82. C
83. C
84. D
85. B
86. C
87. D
88. B
89. A
90. C
91. D
92. C
93. D
94. A
95. D
96. B
97. D
98. C
99. A
100. D
101. B
102. B
103. D
104. C
105. D
106. A
107. C
108. A
109. A
110. B
111. B
112. C
113. D
114. A
115. A
116. D
117. D
118. B
119. D
120. C
121. B
122. C
123. C
124. D

(2) Complete the following :

1. Spinal cord
2. Brain
3. Faster
4. Energy
5. Bat – dolphin
6. Lungs
7. Airbags – seatbelts
8. Penguin – polar pear
9. Decrease
10. Smell – movement
11. Higher
12. Longer
13. Trachea
14. Decrease – friction force
15. Sight
16. Potential – kinetic
17. Increase
18. Carbon dioxide
19. Fuel – food – battery
20. Decrease
21. Nose
22. Kinetic – sound
23. Gills
24. Tapetum lucidum
25. sight
26. Kinetic
27. Electric – sound
28. Collect – reflect
29. Ears – brain
30. Sun – candle – moon – mirror
31. Hearing – bats and dolphins
32. Wings – code
33. B – A
34. Kinetic
35. Kinetic
36. Potential – kinetic
37. Decrease
38. Hearing – echolocation
39. Distance – time
40. Gravity of earth
41. Behavioral
42. Enemies - camouflage
43. Motion – stops
44. Kinetic
45. Blurry
46. Cats – panther chameleon
47. Brown – black – white
48. Potential energy
49. Greater
50. Nervous
51. Echolocation
52. Faster
53. Touching
54. Distance – time
55. Potential – increase
56. Polar pear – penguin
57. Bats – dolphin
58. Sight – heat
59. Increase
60. Distance – time
61. Vibration – hand
62. Longer
63. Kinetic
64. Fats – kinetic
65. Sight – hearing
66. friction
67. Straight
68. Energy
69. Blood vessel
70. Chemical – heat
71. Faster
72. Longer
73. Hearing
74. Nose
75. Kinetic
76. Reaction time
77. Opaque
78. Brain
79. Cow
80. Transparent
81. Sun

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(3) Put (√) or (X) :

1. (√)	23. (√)	45. (X)	67. (X)	89. (√)	111. (X)
2. (√)	24. (X)	46. (X)	68. (√)	90. (X)	112. (√)
3. (√)	25. (√)	47. (√)	69. (√)	91. (X)	113. (√)
4. (X)	26. (√)	48. (√)	70. (√)	92. (√)	114. (√)
5. (X)	27. (X)	49. (√)	71. (√)	93. (√)	115. (X)
6. (X)	28. (X)	50. (√)	72. (√)	94. (√)	116. (X)
7. (X)	29. (√)	51. (√)	73. (√)	95. (√)	117. (√)
8. (X)	30. (X)	52. (X)	74. (X)	96. (√)	118. (X)
9. (√)	31. (√)	53. (√)	75. (X)	97. (√)	119. (√)
10. (√)	32. (X)	54. (X)	76. (X)	98. (√)	120. (√)
11. (√)	33. (X)	55. (X)	77. (√)	99. (X)	121. (√)
12. (√)	34. (√)	56. (√)	78. (√)	100. (X)	122. (√)
13. (√)	35. (√)	57. (X)	79. (√)	101. (√)	123. (√)
14. (X)	36. (X)	58. (√)	80. (X)	102. (√)	124. (X)
15. (√)	37. (√)	59. (√)	81. (X)	103. (X)	125. (√)
16. (X)	38. (√)	60. (X)	82. (√)	104. (X)	126. (√)
17. (√)	39. (√)	61. (X)	83. (X)	105. (√)	127. (X)
18. (X)	40. (√)	62. (X)	84. (X)	106. (√)	
19. (√)	41. (√)	63. (√)	85. (X)	107. (√)	
20. (X)	42. (X)	64. (X)	86. (√)	108. (√)	
21. (√)	43. (√)	65. (X)	87. (√)	109. (X)	
22. (√)	44. (√)	66. (X)	88. (X)	110. (X)	

(4) Correct the underline

1. Inhalation
2. Writing
3. Communication
4. Hearing
5. Acacia
6. Slower
7. Writing
8. Dogs
9. Light
10. Energy
11. Inhalation
12. Food
13. Reed
14. Brain
15. Pulling
16. Water lily
17. Chemical
18. Gills – lung
19. Kinetic
20. Dots
21. Brain
22. Energy
23. High
24. Chemical
25. Two
26. Increase
27. Decrease
28. Ears
29. Eight
30. Downward
31. Different
32. Different
33. Humans
34. Heat
35. Kinetic
36. Work
37. Light
38. Kinetic
39. Pulling
40. Friction
41. Gravity
42. Different
43. Equal
44. Penguin
45. Decrease
46. Legs
47. Desert

✹(5) Match :

1

1- b 2- e 3- f 4- a 5-c

2

1- b 2- d 3- a

3

1- b 2- d 3- c

4

1- b 2- a 3- c

5

1- c 2- b 3- a

6

1- c 2- b 3- a

7

1- b 2- c 3- d 4- a

8

1- b 2- d 3- a